

“Quicklook” Assessment of Greater Adelaide’s Assets and Challenges for Accelerated Technology-Based Growth: Part B

By: David V. Gibson and Graham Gurr

Date: November 2001

Abstract:

Study of assets and challenges for accelerated technology-based growth in Adelaide, South Australia.

Keywords: economic development; Adelaide, South Australia; Australia



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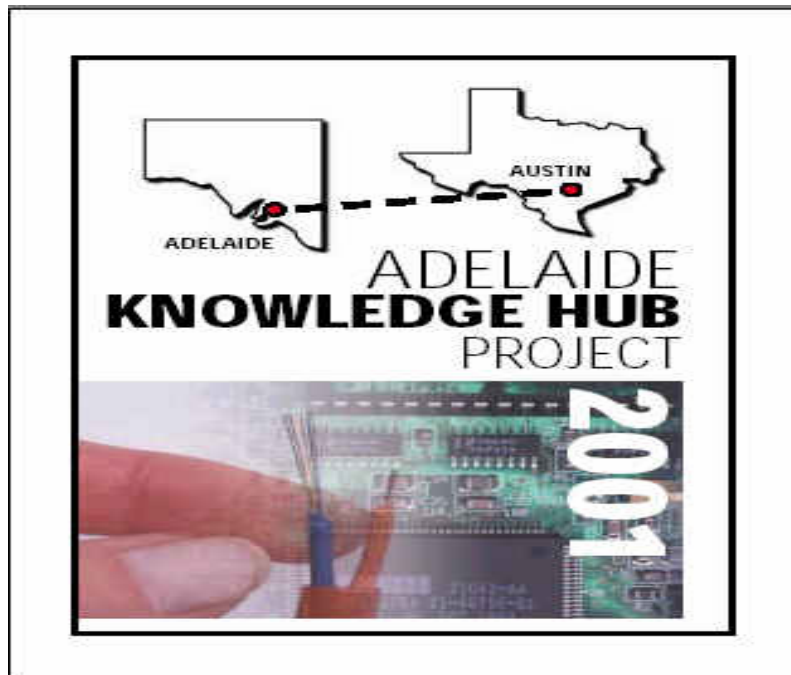
“Quicklook” Assessment of Greater Adelaide’s Assets & Challenges for Accelerated Technology-Based Growth

Adelaide Knowledge Hub Project
November 2001

Final Report: Part B

Primary Investigators:

David Gibson & Graham Gurr



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Editors' Note

We report herein on the process and findings of an experimental research project conducted in Adelaide, South Australia during the week of July 9, 2001.

The study reports the work of many people. We are grateful for their various contributions. While individual acknowledgements are impractical, we are especially grateful to Dr Barbara Fossum and Ms Adrienne Hughto from the visiting team for their assistance with report writing, and Mr Peter Turner who led the Adelaide coordination efforts.

Dr David Gibson
Research Director
IC² Institute
The University of Texas at Austin

Dr Graham Gurr, Director
Science & Technology
Commercialisation Programs
Adelaide University

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Introduction and Overview

Adelaide Knowledge Hub Project

In Part A we reported an analysis and findings developed from interviews held as part of an Adelaide Knowledge-Hub Project. This Part B report details those interviews.

The project was to conduct an innovative “Quick-Look” study of Adelaide’s assets, liabilities, challenges and opportunities for accelerated technology-based growth. The assessment project was conducted during July 9-13, 2001 by graduates, current students, and faculty of the Masters in Science and Technology Commercialization (MS STC) Program at the IC² Institute, The University of Texas at Austin in cooperation with fellow students from the twinned MSTC Program at Adelaide University and participants from Adelaide’s business, government, and academic sectors.

This project came about through Dr Graham Gurr, Director of the Adelaide University MSTC Program, inviting Dr David Gibson, Research Director of IC² and Dr Barbara Fossum, Director of the MS STC Program at IC² to lead a group study project in Adelaide. Dr Gurr obtained \$50,000 towards the project cost through proposals submitted to SA Government, Adelaide City Council, and Land Management Corporation. SA BusinessVision2010 provided valuable in-kind support with logistics.

Adelaide University hosted the 22 business and public sector professionals visiting from Austin associated with the IC² MS STC program. IC² developed their MS STC degree in 1995. That program has the objective of training people to **create regional wealth through technology-based business development**. In 1999 Adelaide University linked with IC2 to deliver essentially the same program (MSTC) and to provide participants from both universities the experience of working together in global project teams.

For one week the visitors from Austin met in teams with over 200 community leaders in Greater Adelaide in 26 sessions covering public and private sectors. The intent was to quickly canvass a broad range of opinions and to form vivid impressions of Adelaide’s assets, liabilities, challenges and opportunities for accelerated technology-based growth.

Key objectives of this effort were to provide data, analyses and strategies to help crystallize a REGIONAL VISION. Specific action initiatives will be targeted to more effectively leverage regional public and private assets and to market and brand the region as an emerging center for technology-based growth. Information and analyses will inform regional business, academic and government sectors on near- and longer-term initiatives to accelerate economic development leading to wealth and job creation and an accessible and sustainable quality of life.

Interviewees were promised confidentiality, so this Part B report has been lodged with the project sponsors (SA Government, Adelaide City Council, LMC/Mawson Lakes) and the project facilitator (SABusinessVision2010) in confidence.

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US Participant's Acknowledgements and Background

Introduction

Support of collaboration is a key theme to emerge from this study. To best understand the nature of this document it is important to have the background of the participants and the organizations that they represent. The project is a case where business, government, and education come together for the good of the region. The technical background of the participants would be too cumbersome in the body of the report, so brief descriptions are included here.

Information is given in this report from a USA perspective of providing individual background information. In the USA it is believed the best way to understand research and writing is to know information about the background of authors and those providing the work. In some cultures this may be viewed as a way of boasting about accomplishments, but this is not the case. The material is provided for informational purposes in order that viewers might better understand perspectives and rationale behind the document.

US Participants' Acknowledgements

The Austin participants in the Adelaide Knowledge Hub Project would like to thank the Adelaide leaders who welcomed us into their community and supported this effort. They gave freely of their time and they provided insights crucial to our memorable and successful visit and crucial to this report.

During the period of July 9-13, 2001, these Adelaide participants from business, government, and academia took large segments of their days and evenings to share their views on their region's assets and challenges for accelerated technology-based growth. It is these views in combination with the perspectives of the Austin Team that provide the major basis for this report. Please refer below for the professional background of the participants from Austin and other Texas cities.

The Austin Team was faced with the challenge of conducting a range of interviews and collecting much needed information within a 5-day period. Our Adelaide hosts organized a full and value-added schedule of business, government, and community visits while, at the same time, providing many opportunities for us to enjoy Adelaide's exceptional quality of life and welcoming hospitality.

In short, the hospitality extended to the Austin Team was exceptional as were the knowledge transfers, and lessons learned. The major challenge has proven to be writing a final report that would reflect well on our visit and provide key value-added information for our Adelaide hosts.

While this report is considered one important product of our "quick look" assessment we would hope that it also signals a beginning of future and longer-term mutually beneficial partnerships and activities between Adelaide, South Australia and Austin, Texas.

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US Participants

David V. Gibson, Ph.D.

Director of Research & Global Programs

IC2 Institute, The University of Texas at Austin

Director of Research and Global Programs at IC² Institute, The University of Texas at Austin. Director of the Multidisciplinary Technology Transfer Research Group at The University of Texas at Austin. Fulbright Scholar at Instituto Superior Tecnico, Lisbon, Portugal. Teaches graduate courses on knowledge/technology transfer and adoption, and regional technology-based economic development. His research and papers have been translated into Mandarin, Japanese, Korean, Russian, Spanish, Italian, French, German, Finnish, and Portuguese. Research and publications focus on the strategic management of knowledge; cross-cultural communication, management, and technology transfer; the management and commercialization of technology; the growth and impact of technopoli or regional technology centers. Consultant to businesses and governments worldwide.

Education: Ph.D. in Organizational Behavior and Communication Theory, Stanford University.

Barbara Martin Fossum, Ph.D.

Founding Director of MSSTC Program, IC2 Institute Fellow

IC2 Institute, The University of Texas at Austin

Directed IC² Institute's Master of Science in Science Technology Commercialization Degree Program for six years, piloting the program from its inception. Joined the University of Texas at Austin in 1991 as a lecturer in the Department of Management in the College of Business. She was the Founder and Director of the Quality Management Consortia program, and an instructor in the MBA and undergraduate programs. Previously the principal owner and operator of Reveille Technology, Inc., a manufacturing software company. Prior to Reveille, she worked as an independent consultant for a variety of companies, and in software development, consulting and management roles for Bell Laboratories and Sperry Computer Systems. Fellow and member of the International Board of Directors for the Society of Manufacturing Engineers.

Education: MS in Mathematics/Computer Science, Stevens Institute of Technology; MBA, PH.D. in Operations Management, The University of Texas at Austin.

Margaret Cotrofeld

Administrative Associate

IC2 Institute, The University of Texas at Austin

Assistant to IC² Institute's MSSTC Program since January 2001. Co-owner of RMR Co Productions and director of office operations. Previous experience as a child educator, technical writer, screenwriter, and photographer.

Education: Belmont University, Nashville, Tennessee; Watkin's Film Institute, Nashville, Tennessee

MSSTC Executives Supporting

Knowledge Hub Project - Tour 2001 to Adelaide, Australia

GRADUATED IN MAY 2001:

The following professionals are strategically placed in a dozen hi-tech and business companies (including Dell and Motorola) within the Austin Regional Area; four are President and/or company owners; and represent a combined business experience of over 250 years.

Nicholas G. Daley

President,

Performance Technologies in Dallas, Texas, USA

Age sixty with twenty years upper level experience. President of a consulting company doing substantial work with companies in dealing with organizational behavior to positively increase

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productivity, sales, and profits. Additionally, a member of the Chancellor's Council of The University of Texas System, a Life Member of The Ex-Students Association, The University of Texas, and on the Advisory Board of the Dr. Kenneth Cooper Fitness Center in Dallas, Texas. Also, an active investor in high technology companies. Worked in various industries during his career and held various operational management positions with profit and loss responsibilities. Acknowledged for success in taking budding divisions, developing operating teams and producing viable business entities. In addition, put together a business plan and raised venture capital to start a manufacturing and distribution company.

Education: BA degree in Math from The University of Texas; MBA degree in Finance from The University of Texas; Masters of Science in Science and Technology Commercialization from The University of Texas

Martha Flores

Dell Computers, Austin, Texas, USA

Age thirty-eight with sixteen years experience. Mid-level Financial Manager with sixteen years experience in commercial banking and high tech with Fortune 100 companies. Skilled at commercial lending, financial planning and forecasting, accounting, operational analysis, project management, and sales and marketing finance. Strong emphasis on analyzing business investments and risks, internal and external funding decisions, starting up new departments, improving cross-functional processes, and maximizing productivity and P&L benefit. Numerous awards. Experience includes High Tech Management Experience at Dell Computer, supporting \$8B corporate accounts division (25% of Dells global revenue). Saved Dell \$1.5M in last 2 years in programs established and changing processes. Worked in Sydney on global Dell project team. Six years in banking, including funding decisions of \$500K to \$4M, and worked with business risk assessment.

Education: BBA Accounting, University of Texas at Austin; Masters of Science in the Science of Technology Commercialization from the University of Texas at Austin.

Anna Milena Hardesty, P.E.

President, Hardesty & Associates

Houston, Texas, USA

Registered Professional Engineer (P.E. in Texas and Florida) and consultant with over eighteen years experience in project management, and petroleum, reservoir, and environmental engineering for both domestic and international operations. Known for estimating reserves and value for use in company reports, sales, acquisitions, mergers and bank loans. Significant experience in project coordination, design and execution with strong bilingual communication skills (Spanish/English) and presentation abilities. Projects have ranged in size from \$100K to over \$500M in value. Skills include: International and domestic projects, marketing reports/audits, production scheduling, technical evaluations, planning and forecasting, reserve calculations, economic and risk analysis, sales and acquisitions, and project management. Formerly employed for consulting and high-level engineering by EXXON, Santa Fe Energy Resources, and others.

Education: University of Texas, Austin, Texas M.S in Science and Technology Commercialization; Tulane University, New Orleans, Louisiana B.S. Mechanical Engineering

Adrienne Carter Hughto

System Analyst V, Information and Systems Division

Texas Department of Transportation, Austin, Texas, USA

Age forty-six with twenty-two years advanced experience in the computer industry. Internet developer and architect with expertise in networking and telecommunications systems. Systems Analyst for new software and hardware systems for implementation on statewide basis. Develop and write Biennial Operating Plans for Legislative approval for technological direction, budgets, and implementation. Current budgetary status 11M. Provide consulting, design, implementation,

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and top-tier support for 500+ offices statewide. Frequent consultation, negotiation, and executive training by Cisco, IBM and other major tech companies. Prior positions in Public Relations and Field Engineer for Memorex-Telex Corp, and Data Processing at the University of Texas.

Education: Masters of Science in Science & Technology Commercialization, Univ. of Texas, Bachelor of Arts in Business Management, Concordia University, Telecommunications Certification, College of Engineering, Univ. of Texas (one yr track), C and C++ Certification, College of Engineering, Univ. of Texas (one year track)

William (Bill) D. Minter, Jr

President and CEO

Leapfrog Technologies, LLC, Abilene, Texas, USA

Currently President and CEO of Leapfrog Technologies, LLC, an Internet service provider and web development firm that serves communities in western Texas. Before Leapfrog was in the marketing and advertising business for more than 20 years. Also, a director of the First National Bank of Abilene and a member of the Direct Marketing Association. Founder of AfricaNews.com, one of the first online news sites covering Africa.

Education: graduate of Cox School of Business at Southern Methodist University. Master of Science in Commercialization of Science and Technology from The University of Texas at Austin.

Cheri Kirby

Director of Records

Girling Health Care, Inc., Austin, Texas, USA

Age forty-two with twenty-one years corporate level experience. Manages Corporate Records Division for a multi-state Home Health Agency. Assists in quality assurance efforts of billing applications. Travels as corporate office representative to field locations to insure compliance of company policy, procedure, and record management requirements. Supports administrative responsibilities for Executive Vice President of Professional Services

Education: Science & Technology Commercialization (M.S.), University of Texas; Health Information Management (B.S.), University of Texas at Galveston

Stephen W. Long, C.P.M.

Senior Consultant, Global SAP Practice

Computer Science Corporation, Houston, Texas, USA

Age forty-five with over nineteen combined years experience in supply chain management, purchasing and material management, experienced in SAP R/3 software versions 4.5B, 3.1H, and 3.0D, plus SAP New Dimension products, SAP R/3 implementations, and logistical support operations. Responsibilities include developing and recommending strategies for, the implementation of B2B e-commerce systems and business intelligence software.

Member: National Association of Purchasing Management (NAPM), Certified in Purchasing Management, American Production and Inventory Control Society (APICS)

Education: Science & Technology Commercialization (M.S.), The University of Texas at Austin, Biology and Chemistry (B.S.) Texas Christian University

Robert H. Meyer

Consultant, Attorney at Law

Land Development and Construction, Austin, Texas, USA

Age fifty-two, with thirty years of professional experience. Worked includes sole proprietor and corporate officer. Roles in the land development and construction industries for residential and commercial projects (senior management, litigation support, expert witness, site observations and written reports, sub-standard construction investigations and building code compliance). Skills include cost estimating, budgeting, purchasing, subcontracting,

operations management, contract administration. Served as the Depart. Head of the Land Management and Development Depart. at the Univ. of the South Pacific, Fiji where lectured in land law and business organizations. Admitted to practice law in four states in USA. Recently, interned at the Global Business Accelerator at Austin Technology Incubator and Office of Technology Licensing at the Univ. of Texas.

Education: Bachelor of Science in Home Building, Trinity Univ., (J.D.) Juris Doctor, the Univ. of Arkansas, (LL.M.) Master of Legal Letters in Real Property Finance and Development, Univ. of Miami, (M.B.A.) Master of Business Administration, Univ. of Arkansas, (M.S.) Master of Science Science and Technology Commercialization, the Univ. of Texas.

Pete Polonski

Founder and Owner,

Adventures in Advertising, and E-Specialties.com, Austin, Texas, USA

Age forty-one with eighteen years of Technology experience. Spent twelve years at IBM, in sales, management. Started personal business in 1995 and have successfully developed alliances with several fortune 500 companies. We were the first company in our industry to adopt e-commerce back in 1998. We were recognized by Interactive Week, Ziff-Davis, and PriceWaterhouseCoopers as having one of the top E-Commerce sites across all industries. We recently opened an office in New York and hired a representative in London to handle our growing international business.

Education: Science & Technology Commercialization (MS), University of Texas at Austin, B.S. Commerce from University of Virginia with Double Major in Marketing and Management Information Systems

David E. Schieck

President,

Erson Consulting in Austin Texas, USA

Age fifty six with almost thirty years profession experience in oil and gas exploration and production, state government and environmental and internet startups. President of a consulting company offering business development and regulatory affairs services. With Conoco Oil and Gas Company, held various leadership positions including Division Exploration Manager and Regional Manager for the Southern US Onshore. Was Division Director for the Texas Oil and Gas Regulatory Commission. With the Commission, designs, lead, and/or coordinate numerous multi-stakeholder efforts involving information technology and the Internet. Focus has always been on knowing and using the right technology tools and techniques, to best assure bottom line results.

Education: BS degree in Geology from The Pennsylvania State University; Masters of Science degree in Geology from The University of Michigan; Masters of Science in Science and Technology Commercialization from The University of Texas. Addition advanced professional training includes Southern Methodist University's Oil & Gas Management Program and the Pennsylvania State University's Executive Management Program.

Simi Shonowo

Product and Test Engineering

Motorola, Austin, Texas, USA

Age twenty-seven, and in professional career for six years. Experience in semiconductor development and manufacturing environment, working on micro-controllers and peripherals. Also, experience in the areas of: Design Engineering, Technical Marketing, Product Engineering, and Reliability Engineering. Additional experience in using Teradyne tools and SAS analysis software. Major strengths in debug analysis and program development and maintenance. Extensive skills in: Product correlation, qualification, test methodology, and tools.

Education: Science & Technology Commercialization (MS), University of Texas at Austin, Electrical Engineering (B.Sc.), The University of Texas at Austin.

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Eric Sloan

Electrical Engineer, Mobile PC Platforms

Advanced Micro Devices, Inc., Austin, Texas, USA

Age twenty-five with five years high tech experience. Design engineer and project lead the the Mobile PC Platform division of Advanced Micro Devices. Most recently has been working on bringing to the market laptop computers based on AMD's 7th generation processor, the AMD Athlon. Current activities include actively pursuing a new venture which seeks to commercialize a new process for producing radioisotopes suitable for use in Nuclear Medicine diagnostic procedures. **Education:** Bachelor of Science in Electrical Engineering from the University of Texas at Austin, and Masters of Science in Science and Technology Commercialization, University of Texas, May 2001

Eddy Trevino

President

The Sachem Group, Austin, Texas, USA

Age forty-five with twenty-five years professional experience. Entrepreneur/Owner of The Sachem Group, a successful Consulting Engineering firm in business for 10 years. Responsible for identification of business opportunities, strategic direction. Specializes in strategic partnerships and alliances. Experience includes consulting job for implementation of Austin Airport (AUS) at Bergstrom Airforce Base. Currently, reinventing company from previous focus on litigation consulting.

Education: Bachelor of Science in Architectural Engineering; Master of Business Administration; Masters of Science in Science and Technology Commercialization, University of Texas, May 2001

Celeste Yeakley

Assistant Director, Engineering

Metrowerks, A Motorola Company, Austin, TX

Age forty-eight with seventeen years of experience in software engineering. Specialized training in program management, effective teaming and strategic business processes. Current responsibilities include international management and coordination of test engineering and setting strategic direction for a team of 7 managers and 52 test engineers. Member of UT's Software Quality Institute Advisory Board.

Education: Science & Technology Commercialization (M.S.), Graduate Level Electrical Engineering, Chemical Engineering, Pre-medical Microbiology (B.S.), Software Project Management Certificate from the Software Quality Institute at the University of Texas, specialized training in Pragmatic Marketing.

SCHOLARS ENTERING MSSTC PROGRAM IN MAY 2001:

Already professionals in their fields, this group of incoming scholars has significant international connections; also, three out of these seven hold one or more graduate degrees coming into the MS program.

Amy Blakely

Education Director

Association and Society Management, Austin, TX

As Education Director, Amy works with not-for-profit organizations providing education and certification programs. Amy is involved in the strategic planning for educational alliances, product development and e-learning/training for the medical industry. In addition to the Education team, she publishes resource books, develops/designs educational seminars, fosters medical

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teaming with governmental agencies, corporations, non-profit organizations and Universities throughout the U.S.A.

Education: Masters degree in Gerontology.

Cristiane Chaves Gattaz

President

Ambiência Sistemas de Informação Ltda, Campinas, São Paulo, Brazil

Currently company president, guiding the company's overall direction and focus. Consults with individuals, communities, business teams, and international companies on current business process technology and methodology issues. Began career at Ambiência Sistemas de Informação Ltda., Brazil in 1996 as an intern and provided support in process modeling and simulation, accounting, legal, marketing, and operations. Between 1997 and 2000 became the president and made critical leadership decisions, as well as developed own business process methodology. Also broadened experience in all areas of management.

Education: B.A. degree in Business Administration from Pontificia Universidade Católica de São Paulo - PUC-SP in 2000.

Kevin K. Hudson

Global Data Networking Consultant

Concert: a joint venture of AT&T and British Telecom, Dallas, Texas, USA

Kevin Hudson has worked with the World Trade Organization (WTO) and the International Telecommunications Union (ITU) in Geneva Switzerland. He was recruited by AT&T to work as an e-Commerce consultant. Upon completion of his MBA in International Business, Mr. Hudson was asked to join CONCERT, a joint venture of AT&T and British Telecom, created to focus on the global telecommunications needs of large, globally active companies.

Education: B.A. in History, University of Texas, 1990; and completed hours in Political Science to earn a double major had one been offered by the University; MBA in International Business from LeTourneau University, Geneva, Switzerland.

Catherine M. Polito

President

Management by Design

Fourteen years of advertising, public relations, and marketing experience.

Reestablished Management by Design and re-branded company as a Marketing services organization. Prior to that position, served as Director of Marketing for Globeset, Inc. where created a new corporate identity and successfully branded the digital wallet for lighthouse customers American Express and Visa International. In addition, created product interest through Trade Shows, direct mail, and web initiatives for Globeset's eCash management tools and SET products. (Spotlight customers included: ACI, Best Buy, Dillard's, Hertz, Kinko's, NetLife and Oki-Japan.) Prior to joining Globeset, Inc. Also President of Management by Design, an advertising firm based in Austin, Texas. The firm provided ad campaigns, public relation services and design services for a wide range of profit/non-profit customers. (Spotlight customers included: 7-11, Hilton Hotels, IBM, State of Texas and YWCA.) Before launching Management by Design. Held a variety of management positions in both the private and public sectors since 1977. As part of her Masters of Science in Science and Technology Commercialization program assessing technologies from across the United States as well as from Russia and Australia.

Education: BS, the University of Texas-North Texas (cum laude).

Burrjed Stafford

*Investor Communications Web Team Supervisor**James Mutual Funds, Austin, Texas, USA*

Prior to obtaining his degree Mr. Stafford was employed as a Ranch Manager for Stafford Brothers Ranch in Edna, Texas from May of 1989 to August of 1993. During this time he was responsible for the day-to-day activities, as well as the long term planning, of the ranching operation. After college he began his career at Van Kampen Mutual Funds in Houston, Texas in 1998 where he became an Investor Service Representative. Mr. Stafford currently is an Investor Communications Web Team Supervisor at Janus Mutual Funds in Austin, Texas where he manages a team of eight representatives.

Education: B.S. degree in Agricultural Economics from Texas Tech University in 1997.

Adelaide Participants

The authors are grateful for the excellent organising work that was done in the 2 months prior to the visit by a coordinating team under the guidance of Peter Turner, and sponsored by SA Business Vision 2010. Many hours were spent in ensuring that a broad cross-section of interviews were arranged, as well as sourcing information about the SA economic environment to provide to the Austin visitors in advance. The members of the coordination team were:

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Listed below are current students in the Adelaide University Master of Science and Commercialisation program, some of whom participated in the Adelaide Knowledge Hub Project.

| | |
|------------------|---|
| JENNY KARAVOLOS | Co-Manager, Professional Systems, Saab Systems B. Acc, CPA, MBA (incl attaining Brook Scholar Award) |
| MATTHEW SULMAN | Solicitor and Trade Mark Attorney, Peter Maxwell & Associates BA (Hons), Dip Law (BAB) |
| GERALD BUTTFIELD | Business Manager, Dept of Physiology at Adelaide University |
| MARK NEELY | Principal Consultant, Infolution Pty Ltd LLB |
| MARIANNE DUNHAM | Senior Associate, Finlaysons LLB |
| DEREK ROGERS | Staff Engineer, Motorola BE (Hons), BSc (MA Comp Sc), PhD |
| TOM WALTHAM | Associate, Palmerston Projects |

COMMERCIAL IN CONFIDENCE

| | |
|-------------------|--|
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| MICHAEL BRIDGE | Proprietor, Michael E. Bridge & Associates |
| BYRON RIESSEN | General Manager, Sales & Operations, Foursticks |
| MICHELLE BUSUTIL | Department of Paediatrics, Adelaide University |
| SHANE CHEEK | Project Officer, Enterprise Education Group, Adelaide University |
| ANDREW BARTLETT | Manager, Laboratory Animal Services, Adelaide University |
| JOHN KING | General Manager, Cells Plus Pty Ltd |
| MICHAEL PARTRIDGE | Team Lead, Motorola Australia Software Centre |
| SHAUN BERG | Ward & Partners |
| HELEN ANDERSON | Normandy Exploration Senior Geologies |
| ROSEY BATT | Norman Waterhouse Partner |
| KATRINA BURZYNSKI | Dept of Administration Information Services Business Development Manager |
| PAUL DALY | Dept of Industry and Trade Senior Investment Manager |
| NICK EDOLS | Grain Growers Association Business Manager |
| MICHELLE FRASER | Adelaide University Research Coordinator – Colgate Research Centre |
| RON GRILL | Electronics Industry Association Business Development Manager |
| GEOFF HALL | IQ Branding Managing Director |
| JANE SCHUELER | Techstyle Mondial Director |
| GAY WALLACE | Austereo Pty Ltd Group General Manager – Corporate Affairs |
| HORDEN WILTSHIRE | (recently retired from Navy) |

COMMERCIAL IN CONFIDENCE

Graduates of the MSTC program in 2001 (the first graduating class), who participated to various degrees in this Project are:

- ❑ Roger Boot
- ❑ Darren Cundy
- ❑ Lusia Guthrie
- ❑ Brian Louey-Gung
- ❑ Paul Rennie
- ❑ Stan Shepherd
- ❑ Andrew Cecil
- ❑ John Hunt
- ❑ Gerard Rankin
- ❑ Peter Vroom

The following table shows the interview themes that were established (both by industry sector and also for specific issues), and also the persons who coordinated the interviews:

| <u>SECTOR</u> | <u>COORDINATING CONTACT</u> | <u>EMAIL</u> |
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COMMERCIAL IN CONFIDENCE

Group Interview Schedule

The following is an index table for the cases studied.

TEAMING INFORMATION – This section serves as an index for informative purposes for the focus groups during the Adelaide Knowledge Hub Project

Aquaculture- Team lead Adrienne Hughto with members Amy Blakely, Cheri Kirby, and Cristiane Gattaz. They met Friday July 13, 2001 with host Dr Michael Deering at venue SARDI, Westbeach.

Arts - Team lead Amy Blakely with members: Barbara Fossum, Amy Blakely, Eric Sloan, Pete Polonsky, and Robert Myer. They met Thursday July 12, 2001 with host Mandy-Jane Giannopoulos at venue Arts SA, Hindley Street.

Australian Submarine Corporation - Team lead Celeste Yeakley with members Robert Meyer, David Schieck, and Eric Sloan. They met Friday July 13, 2001 with host Ross Milton at venue Australian Submarine Corp.

Automotive - Team lead Nick Daley with members Simi Shonowo, Bill Minter Jr, Anne Hardesty, and Barbara Fossum. They met Friday July 13, 2001 with host Frank Woolford at venue General Motors Holden.

Branding - Team lead David Gibson with members Catherine Polito, Pete Polonsky, and Barbara Fossum. They met Thursday July 12, 2001 with host Ron Tomlian at venue Adelaide Town Hall.

Civic Luncheon -Team lead David Gibson with members Barbara Fossum, Adrienne Hughto, John Hunt, and Simi Shonowo. They met with host Margaret Caust of Capitol City Project team. The Adelaide team included: Sue Filby, General Manager, City Assets; Ian Harrison, Chief Executive, SA Business Vision 2010; Roseanne Healey, CEO of SA Great; Tony O'Malley, Consultant Business Development works with Business Vision 2010; Peter Smith, Strategic Consultant, Defense and Aerospace and others.

Civil Infrastructure and Civil Infrastructure Lunch - Team lead Adrienne Hughto with members Anna Hardesty, and Robert Meyer. They met Thursday July 12, 2001 with host Steve Ward at venue Dept of Industry and Trade. Lunch was with host Margaret Caust and venue Capital City Committee

Defence Science Technology Organization - Team lead Eddy Trevino with members Burrjed Stafford, Kevin Hudson, and Stephen Long. They met Friday July 13, 2001 with host Gary Smith at venue Defence Science Technology Organisation, Salisbury.

Defense Teaming Centre - Team Lead - Celeste Yeakley Members - Burrjed Stafford, Kevin Hudson, Eric Sloan Met on Monday July 9, 2001 with host John Farger at Technology Park

Education - Team lead Robert Myer with members Adrienne Hughto, Amy Blakely, and David Schieck. They met on Monday July 9, 2001 with host Kevin Richardson at venue Education Development Center.

Entrepreneurial Infrastructure - Smart City- Team lead Pete Polonsky with members, David Gibson, Nick Daley, Catherine Plito, and Robert Meyer. They met Wednesday July 11, 2001 with host: Cr Michael Harbison at venue Town Hall.

Food - Team lead Cheri Kirby with members Stephen Long, Amy Blakely, and Celeste Yeakley. They met Thursday July 12, 2001 with host Justin Ross at venue Grenfell Street (Black Stump).

Games and Animation - Team lead Burrjed Stafford with members Martha Flores and Anna Hardesty. They met on Thursday July 12, 2001 with host Chris Hannaford at venue Adelaide Town Hall.

Health - Team lead Cheri Kirby with members Barbara Fossum, Celeste Yeakley, Eric Sloan, and Amy Blakely. They met Wednesday July 11, 2001, with host Barbara Erichsdotter.

Hotel Restaurant Management - Team lead David Gibson with members Catherine Polito, Peter Polonsky, Barbara Fossum, Robert Meyer, and Bill Minter Jr. They met Friday July 13, 2001 with host Gerald Lipman at venue Regency TAFE .

ICT - Team lead Adrienne Hughto with members John Hunt, Bill Minter Jr, Simi Shonowo, and Kevin Hudson. They met Thursday, July 12, 2001 with host Paul Wiszniak at venue EDS.

Innovation, Science, and Technology Centre - Team lead Pete Polonsky with members David Gibson, Martha Flores, and Catherine Polito. They met on Monday July 9, 2001 with host Peter Schultz at venue EDS Building.

Manufacturing - Team lead Nick Daley with members Simi Shonowo, Anna Hardesty, and Barbara Fossum. They met on Monday July 9, 2001 with host Len Piro, at venue Centre for Manufacturing.

Mawson Lakes - Team lead Bill Minter and Simi Shonowo with entire IC2 group as members. The hosts were Eric Olsen and Kathy Laycock with tour of Mawson Lakes development, Technology Park, Mawson Lakes Campus of UniSA, Mawson Central Area, Lakes and urban villages.

Minerals Environment – Team lead David Schieck with members Anna Hardesty, and Kevin Hudson. They met Wednesday, July 11, 2001 with host David Blight, venue Minerals SA, Glenside.

Smart Card - Team lead Nick Daley with members Robert Meyer, Eric Sloan, and Eddy Trevino. They met Thursday July 12, 2001 with host Chris Hannaford and venue Adelaide Town Hall.

Technology - Team lead David Schieck with members Cristiane Gattaz, Bill Minter Jr, Simi Shonowo, and Kevin Hudson. They met Thursday July 12, 2001 with host Paul Wiszniak at venue EDS.

Thebarton - Team lead David Schieck and Eric Sloan with entire IC2 group attending. First stop was Gropep , next Thebarton Incubator and Commercialization precinct, then Digital Precinct with Charles Sturt Council

Tourism and Hospitality - Team lead Stephen Long with members Martha Flores, Anna

Hardest, Cristiane Gattaz, and Catherine Polito. They met Thursday July 12, 2001, with host: Joseph Tuma, at venue Santos Building.

Transportation - Team Lead Eddy Trevino with members Stephen Long, and Adrienne Hughto. They met Wednesday July 11, 2001 with host Wayne Parnham and Phil Baker at venue Ports Corp.

Venture Capital, Angels, etc. - Team lead Anna Hardesty with members: David Gibson, Nick Daley, Martha Flores, Burrjed Stafford, and David Schieck. They met with host Jim Hazel at venue Equity one, Level 2, 89 King William Street.

The Interviews

SARDI – SA RESEARCH AND DEVELOPMENT INSTITUTE FOCUS ON AQUACULTURE

By Amy Blakely, Christiane Gattaz, Adrienne Hughto, and Cheri Kirby

Introduction and Background to SARDI

The South Australian Research and Development Institute (SARDI) Aquatic Sciences Strategic Research Area conducts scientific research and development activities on the aquatic resources of South Australia. This research yields knowledge about the status of fish populations, the impact of fishing practices, aquaculture, and leads to the development of new commercial opportunities. Research and development undertaken by SARDI benefits and adds value to the State's commercial fishing and aquaculture industries that are worth around \$407 million per annum (South Australian Fisheries and Aquaculture Information and Statistics Report April 2001 Kinght, MA; Tsolos, A and Doonan, AM SARDI Research Report No 51). Through a better understanding of the marine environment, the research also provides the information to maintain and protect a sustainable, productive aquatic environment used by more than 300,000 recreational anglers each year and enjoyed by all South Australians¹. SARDI's Strategic Plan can be viewed at http://www.pir.sa.gov.au/pages/showcase/strat_plans/sardi.pdf

SARDI is a group in the Primary Industries and Resources South Australia (PIRSA) which conducts an extensive R&D program. The Fisheries and Aquaculture Group of PIRSA is responsible for the licensing and development of aquaculture.²

SARDI offers a broad range of scientific, technical and project management expertise in the areas of natural resource and aquaculture assessment, development and management. It also has links with Australian and a number of overseas universities to facilitate collaborative research and utilizes post graduate students. In addition, established researchers visit as participants of a number of nationally coordinated programs to carry out research of a collaborative nature.

Australia has around 1000 estuaries and approximately 36 700 km of coastline. The size and diversity of Australia's coastline is immense. The fact that the coast is where most economic activity occurs in Australia and where nine out of ten Australians live (including one half of Australia's Indigenous community) means there are major issues to be addressed.³ These issues deal mainly with ecological concerns.

South Australia's international reputation for a clean and unpolluted environment is a vital asset. The availability of land in a range of climates and suitable coastline and

¹ <http://www.sardi.sa.gov.au/aquatic/aquatic.htm>

² http://www.pir.sa.gov.au/pages/aquaculture/about_aqua_intro/about.htm:sectID=119&tempID=10

³ <http://www.coastal.crc.org.au/national/index.html>

freshwater areas gives South Australia the ability to farm a variety of species for domestic and export markets. Tuna and oyster farming are currently the main aquaculture industries. Expanding sectors include coastal finfish, land-based abalone, barramundi, and marron (a freshwater crayfish). Developmental sectors include marine algae, scallops, rock lobster and freshwater finfish.

The South Australian aquaculture industry has developed substantially in the past decade with premium quality, high value species being the cornerstone of the industry. In 1998/99 the value of aquaculture production in South Australia was \$180 million and indirectly generated business revenue of more than \$156 million in other related industries. (The Economic Impact of Aquaculture in the Eyre Peninsula Region and South Australia, 1998/99. November 1999. Econsearch Pty Ltd). In 199/2000 the value of the aquaculture industry exceeded that of the wild fishery for the first time. Aquaculture value in 1999/2000 reached \$202,000. Together with downstream processing and value adding, this could lead to trebling the current value of aquaculture to the State.

PIRSA listed Competitive advantages

PIRSA has published and listed South Australia's many competitive advantages for aquaculture as follows:

- Pro-active government assistance to provide:
 - economic and business development service (transferred to SA DIT)
 - industry management service
 - market development service
 - quality assurance service
 - safety and biotoxin monitoring
 - environmental monitoring
 - fish health service
 - technology exchange and information service
 - significant research capabilities.
- - resource allocation and policy development (Aquaculture SA have number of staff)
 - quality assurance service (used to exist (about 18 months ago) in Aquaculture SA, but closed down)
 - safety and biotoxin monitoring (Aquaculture SA has a Shellfish quality assurance manager & staff; SARDI has recently received funding for a team to focus on issues across all primary industries)– environmental monitoring (Aquaculture SA has manager; done on a consultancy basis by SARDI, private consultancy companies or farmers)
 - fish health service (Aquaculture SA policy position(s) has been been vacant for sometime & in past had high turnover; no SARDI research positions, diagnostics done by Veterinary Pathology Services Pty Ltd since government closed Vetlab about 5 years ago)
 - technology exchange and information service (Aquaculture SA has closed this relying primarily on regional development boards and councils)
 - significant research capabilities (government funding at SARDI covers 4 fulltime positions on a permanent basis; other positions dependent on ad-hoc state government cabinet grants, national competitive research grants and consultancy income).

- An international reputation for a clean and unpolluted environment.
- Availability of land in a range of climates providing for the potential culture of a range of species.
- A geographic location enabling swift transport of product to both the domestic and international markets (loss of Ansett is a major problems for some seafood export sectors).
- The government of South Australia recognises the economic importance of aquaculture to the State and will continue to support this expanding industry to ensure aquaculture fulfils its maximum potential¹.

Focus Group

The Adelaide Knowledge Hub Project Group hosted a focus group following a presentation from the SARDI group. 3 major areas addressed by the SARDI group were:

1. Environment
2. New species and technologies
3. Economic returns for existing industry sectors.

They also stated that Port Lincoln is the main center for the fishing industry – prawn and tuna, abalone and rock lobster, etc. It was further noted the primary industries are aquaculture, capture fisheries, and recreational fisheries.

Observations and discussions were active as well as productive. This paper has taken the knowledge transfer from the meeting and arranged into areas of Strengths, Weaknesses, Opportunities, Threats, Issues, and Areas of Discussion. It is meant to be a critical analysis in order to approach areas for improvement, be utilized for internal analysis, and hopefully help increase the quality of the SARDI service.

Strengths

- Recognized objectives with stated dual purpose –development and sustainability
- The aquaculture industry as a whole is on an upscale growth curve. The fishing industry is static due to the sustainable exploitation level having been reached, aquaculture is becoming increasingly important , aquacultured product is producing an improved quality fish which is resulting in a higher market value and improved profitability. An example is tuna aquaculture which has resulted in product being sold at about \$3 to \$8 per kilo to 30 to \$40 per kilo; with the weight of fish also having doubled so getting more per fish than would have otherwise been possible for a quota limited fishery.
- New species and technologies – Oysters are about a \$10M industry and oyster culture has little environmental impact; regional agriculturists and families have been facing an increasingly difficult economic environment; research in about 1984 looked at farming Pacific and native oysters in suitable sites around the state; showing the feasibility. This initiated the expansion of the industry over the last decade. Existing intertidal areas available for farming are almost fully utilised

and future expansion will be dependent on the development and proving of suitable methodologies so that deeper water sites can be used.

- The traditional tuna industry –was facing bankruptcy after substantial quota reductions due to overfishing, and this drove the initiative to start tuna aquaculture. A research and development project began in the early 1990s between the industry, state government and Japanese Overseas Fishery Cooperation Foundation. The industry is worth 202,000 million (199/2000) and has the potential to expand further through research that reduces operating costs, and enhances production and product market price; the longer term holding of tuna and tuna propagation. The latter is also an important risk minimisation strategy due to ongoing concerns about the sustainability of wild stocks and the effects of overseas competition from the growing northern bluefin tuna aquaculture industry. It is likely, however, to take a decade to achieve the desired outcome..
- The Government has provided a low level of funding for research and development on the propagation of new coastal finfish aquaculture species. The projects, supplemented by federal government funding, have been successful in stimulating the construction of two commercial hatcheries and pilot scale and commercial growout of a number of species (snapper, yellowtail kingfish, mullet and whiting) Considerable opportunity exists for further expansion if appropriate research is funded on factors presently limiting development
- Working to create centers of excellence – The newly commissioned Cooperative Research Centre for Sustainable Aquaculture of Finfish (Aquafin CRC) will have five program areas: SBT Propagation, Production, Environment, Health and Education and increase research and development on tuna and salmon. Its siting in Adelaide will provide a higher national profile for aquaculture in SA, and will enhance national and international linkages The recent opening of the Australasian Experimental Stockfeed Extrusion Centre by SARDI at the Roseworthy Campus is another initiative along with the Water Industry Alliance and Bio-Innovations SA that will offer developmental opportunities in the aquaculture area
- Waste water treatment & integrated farming. SARDI research in this area is focussed on enhancing sustainability and better utilising waste resources. The overseas research has led to the introduction of new concepts to Australia, to the broader evaluation of novel concepts in other environments and to the exchange of scientists and knowledge between countries (Australia, India, & Vietnam)
- Aquaculture as part of inland saline groundwater mitigation schemes (Australia). Australia has serious salinity problems affecting large areas of the continent. Considerable potential exists to integrate aquaculture production into the various mitigation schemes being developed (SE drainage scheme, groundwater bore removal schemes (lower and upper Murray areas, Riverland salt water evaporation basins, etc) but funding has been difficult to source.
- Abalone aquaculture is continuing to expand in South Australia as well as other southern states. Australia is already a major world producer of abalone based on its wild fisheries and aquaculture is diversifying business and marketing

opportunities. South Australian research has very much been instrumental in the development of this industry having and continuing to provide the national focus on propagation, system design, feed development and nutrition, and most recently genetics. Opportunities exist for further expansion of this industry through increased production, reducing operating costs and diversifying products (eg. abalone pearls).

- Suitable areas for aquaculture. Although access to sites can be difficult, aquaculture companies and local government have developed roads and vessel servicing sites in some areas. The low population level in the state means a lot of the coastline is uninhabited and is pollution free. Freshwater runoff is also mostly absent along the state coast which again results in environmentally clean waters.

Weaknesses

- Import about 60% compared to export 40%. (The import of the 60% is of lower quality and priced fish, however, the export is of high quality like tuna.) The weakness is in the fact that more fish is imported than exported.
- Danger is that such a large portion of the sales goes to the Japanese markets, that if a hiccup in the market on a particular species of fish that they like – could cause ramifications.
- Snapper farming – The three year research project was successful in generating initial interest and the development of commercial hatcheries and growout operations. It has not however gone on to bigger things because of the discovery of a potentially more economically profitable species for farming (yellowtail kingfish) and the effects of a number of issues that could be addressed through appropriate research if it were funded (eg. poor quality of farmed as compared to wild product resulting in lower than expected market prices; need to improve production through enhanced growth, which has been shown to be achievable through genetic selection overseas – about 14% per generation).
- Aquaculture as a strategic plan. Three state based aquaculture strategic plans have been produced over the last decade and a national one is presently being completed by the National Aquaculture Council. The recently formed SA Aquaculture Council is also active in this area. The main problem has been integrating the diverse and rapidly changing needs of the various sectors of the aquaculture industry in a government environment where existing resources for new industries were very limited and new resources are largely dependent on once off concessions, cost recovery or fee for service. A lack of consensus on direction has also been an issue between major government departments with involvement in aquaculture. Problem is that industry is developing rapidly, need cash flow, and industry requirements change rapidly – know some things like fish health is an area that needs to be targeted, but since it is not a problem right now, will wait until cash is available

- Power availability in remote places scarce - Looking for 3-phase power, diesel power is expensive. Lack of information on alternative power sources which could be used to enhance temperature thereby increasing production or offsetting establishment or operating costs (eg. wind, solar, geothermal).
- Lack of roads to access areas because of remote locations.
- Each species is very different and development is difficult and time consuming so investment risk is high. There is a tendency for people to view the aquaculture and even fishing industry as one industry, when there are many differences that need to be specifically addressed.
- In many sectors the aquaculture product volume is not adequate to develop or further increase exports by much at this time even though the export markets are probably those that should be targeted. I believe there is inadequate market research and development associated with development of new species, inadequate product differentiation focused on value adding to niche markets, knowledge of whole sale marketers and consumers want, product advertising, predictive marketing trends (eg effects of varying exchange rates, international developments affecting market volumes and consumer demand) etc. Industry frequently advises that they do not wish for government involvement in this area but what is done seems to be deficient.
- The freshwater crustacean (yabbies and marron) aquaculture sector has not developed as expected. The South Australian Freshwater Crustacean Farmers Association has developed a comprehensive strategic plan but have been unable to access the funds to address the key issues. The results of research and development done in Western Australia to develop faster growing sterile hybrid yabbies have not been transferred to South Australia at this time and the opportunities to increase production here are unknown at this time.
- The lack of a unified all of government direction is an issue as is the funding of the resources across all of government to address the key limiting issues (see below).
- Government has committed inadequate resources and a series of disconnected funding efforts (most R&D funding for SARDI, Uni's and industry is federal not state). Government funding is done on an annual basis, the lack of projected planning (the strategic plans have always been for 3-5 years but not always the funding) effects stability of agency, employment and industry growth.
- Employees of many sectors of aquaculture have low morale, high stress, and very real concerns about job security.

Opportunities

- Cultural opportunities would include asset orientation, strategic vision based development, and Civic Infrastructure development.

- Aquaculture is the fastest growing area of development in the SA seafood industry – work for environmental sustainability, and develop new species and technologies, enhance economic returns.
- Have geothermal water in regions of the state that is perhaps not promoted quite as much as it could be. How to address the aquaculture related issues and optimise production using this resource is also poorly researched and understood (ie. dealing with low oxygen, high iron content, water hardness and in some instances hydrogen sulphide, etc)
- LADS project was used to map waters up to 30m – not being used as it should.
- Need to be working on detail specific reports– e.g. aerial mapping of vegetation, bringing together and making available to resource engineers. (These 2 dot points need to be integrated – the key opportunity is 1) bringing together scattered information into a user friendly GIS based system that can be used by resource planners and managers, as well as investors, and 2) targeting the gaps in the information to make).
- Rock lobster is good potential market for aquaculture but collection of juveniles is problematic and propagation is unlikely for many years
- Abalone diet development industry in SA and Australia is small at this time; feed sales will remain low unless targeted overseas – doubtful
- Sea Urchin – looking at manufactured feeds to increase roe (gonad) quality. A developmental project at this time; if successful may be an opportunity for propagation later.
- Internationalization of aquaculture is evident. SA is now well placed for supplying fry overseas
- High growth market, with future for high returns.
- World leadership in environmental concerns.

Threats

- High staff turnover and lack of long term job funding within government, including SARDI.
- Funding varies year to year, causing uncertainty in the industry particularly where research and development often takes 3-5 years before pilot scale trials are feasible.
- Legislation is outdated, more money and focus to aquaculture should be allocated.
- How universities are coping with requirements for fishing industry, study results were poor.

- Competition from International companies so maintaining a competitive advantage is an important area of R&D (so is risk minimisation).
- It is the development that leads to commercialization – needs funding early on. Also need to recognise that R&D needs change with upscaling; often R&D is not continued into the commercialisation phase, where it can be just as important.

Issues

- Need real direction with regard to Genetic engineering. Genetic engineering – should do? Right now no genetic engineering is being done. Much of the world is involved and South Australia can be left behind in specific areas including ones of low impact. However, they are not sure if they should be researching or going in the generic engineering sector or not. Need more assessment so they can have better direction. Need to separate market directions (ie. no sales of GMOs) from need to develop capacity for GMOs if/when market needs change (5-10 year lag phase between initial R&D and marketing outcomes of this R&D).
- Site availability is key issue in regards to suitability. There is competition between recreation and commercialization. Need to be developing new sites and technologies for their use further offshore.
- Coordination of communication issue of government and industry level – one direction or working against each seems to be happening. Many committees even on industry level are going in different directions. Need help specifically with technology transfer and R&D (problem arises in part from governments decision to no longer have extension officers). Those working for development boards are young graduates rather than experienced communicators with a high level of technical expertise (what is really required to do an effective job with existing industry and significant investors).
- Policy has key issues that need to be addressed that include legislation for planning, resource management, and environmental issues.

CURRENT STRATEGY

The discussion was based more on the technology side. Attempts are being made to set up a marine technology park. Could use a technology park as a demonstration place and could be used by Water Industry Alliance that was set up by State government. SARDI is also actively involved in a number of overseas projects managing brood stock and hatchery culture system, design, evaluations & project management.

The main issue in South Australia is having the resources to pull together diverse groups to focus on overseas opportunities – e.g. the task of the Water Industry Alliance for their sector. Because of a focus on producing product for local markets there is uncertainty which agency should bring players together to target further markets, or as partners to tackle new markets.

INDUSTRY PERSPECTIVE AND DISCUSSION ISSUES

The discussion issues were intense and particularly relevant to problems within the aquaculture industry.

Historically Governments have nurtured agriculture. Terrific support structures are in place for agriculture. Aquaculture is much newer and quite a lot has been done in aquaculture in a short time, but much more could be done; there is a need for more and better focused resources.

The aquaculture industry growth pattern is similar as wine was in 1996 or 1997 but growing at twice the rate. Aquaculture is growing at 35% per year, with no projected change in the next three years. The 2.52 M production of 96 and 97, just passed 5M in the last year. Now aquaculture is starting to get into volume production. This seems to be happening on world scale with only relatively few species being grown. South Australia's focus on marine environment should be evident and important and a high growth area targeted for further Government support.

In terms of lack of planning have series of disconnects. Get a lot of duplication of effort – there are three agencies that put money into Department & Trade, Education that do not work together as well as they should. At regional level it gets more complicated and there is not a lot of knowledge about the dynamics of the investment side of this industry. Difficulties of funding of research is that dealing with old systems of funding, put in application, etc. by time get funding it may have been sold. Need to have consistent long term and responsive to issues that pop out. Support structures need to be in place. Industry is poorly organized many leaders have been putting their own dollars, seeing now as associations develop starting to say should be connected with SARDI. It is believed that some of duplications and parallel programs will be there for quite some time.

Personnel issues and retention of staff are a major concern in many areas of SARDI. This is a critical issue since intellectual property, knowledge transfer, and morale suffer dramatically. The cause is an almost year to year funding, staff turnover has horrific – people worry about jobs due to funding, and in some areas industry pays more. However, it seems that policy people are paid quite well. Once in government, staff often moves around to other agencies. Big issue is churning of staff, dynamics of working aquaculture needs better legislation to support have 10 year project for better legislation, it is a new industry that is high stress.

There is an overall problem where things are not linked together. Currently involved in five industry bodies (Mark Cody) feels the industry is too diversified – Must run 16 hour days in fast paced industry – can't do for 3 to 5 years will get burned out. People and groups going to the minister over aquaculture are disparate. The minister hearing 4 or 5 different things and it gets confusing. It is also very unclear what is being asked by some groups. Need to have more strategic focus, work on wealth generation, and don't let the industry fall over.

Fishing legislation that governs aquaculture was written in 1994. Researchers are poorly paid – not in for the money but enjoy, continuity of staff is getting harder and harder – many of them down to 3 month contracts. Currently they are getting more dollars through foreign investment, joint projects with universities in other countries. However, current feelings are that aquaculture is seriously underfunded. Funding also varies from year to year – there is a license fee – where prime industries pay fee – like

alone industry pays several million to the government each year, money is split to compliance, management and licensing, and research - also pay on top of that 2.5% of GDP collected by state for FRDC fisheries research and development Corporation.

Some of overseas universities have better interface on vocational experience and education – just starting to do this. This is similar to apprenticeship in the schools for “real world” job training.” They feel some should go to higher education sector (University level) and saying “hey fellas how about working with industry?” The last six years there has been a part of formalized program entry – (for the last three year levels of high school for 1/3 to 1/2 industry). The issue is getting competency based learning that is related to work on the job. How to create for students? Some places did change this education to replace some core courses and now have 54 currently signed up for new apprenticeships – South Australia is leading the nation on this. These students are aligning themselves with this industry. But, do not understand why just now supporting beyond high school. Much more should be focused in this area for undergraduate and graduate students. A setback was an instance where Flinders were placing undergrads within industry but got dropped last year. They are looking to rekindle this year. At the university level skills for dealing with aquaculture are not where they should be. Business background is required, but people are coming out of Marine Biology with no Business background. Too many biologists compared to engineers and physicists.

Worldwide trends are an issue where South Australia can hold head up high – managing the environment, simple things and practical things like companies environmental plan where community itself demands better environment. Want to be sure build and not tear down. Environment issues are supremely important. Understanding of factors worldwide are of critical issue. First time new generation of leaders and had to provide leadership programs.

A great success story is the Tuna Industry. It has gone more high tech where capture cages getting further and further off shore. Was in decline in terms of maritime skills to high job growth with wide array of skills. There is a diverse amount of responsibility, one foot seems to be in aquaculture, commercial fishing, and food processing.

SUMMARY

The SARDI group and the aquaculture industry have a lot to be proud of in South Australia. They have worked hard utilizing many bootstrapping techniques with competition on an international basis. The growth and economic return from all indicators is massive, with low risk factors. They are almost desperately looking for more governmental including legislative, educational, and citizen support. Lack of improved and continued support can kill this industry. There is a wide range of diversity in this market area from feeds and diets to implementation of various species that have potential for large economic return. Improvements in strategic growth plans, improved direction/coordination, and roadmapping are often a common barrier within new growth industries. It is suggested that careful analysis of each of the points made throughout this paper can lead to improved wealth as well as technological advancement for the region.

Interview participants:

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COMMERCIAL IN CONFIDENCE

ARTS

Interview Team

- Amy Blakely
- Barbara Fossum
- Paul Daly
- Eric
- Burrjed Stafford

Who we met with

The team's interview session was held on 13th July with various representatives from the Arts and Culture Industry. Representatives are from new media, ARTSA, film industry, festival committee, an independent artist, and West End precinct business owners. Because of the focus of this research study on technology growth and entrepreneurship, this summary evaluation of the Arts is centered on the areas of technology and enterprise, as they are vital to the South Australian (SA) economy.

Opportunities

- Identified as the Festival State, the Arts have a positive effect on tourism, industry development and the economy in South Australia.
- Beginning to see the development of relationships and products between the Arts and high tech industry.
- Smaller groups are working with ARTSA for being the early adapters of arts.
- Development of programs for cultural events.

Case Studies

Parallelo

In February 2001 Parallelo established a relationship with Motorola to develop community cultural events in Adelaide. Motorola receives intangible services from artists like assistance in multi-cultural sensitivity in their products. Further, Motorola also receives tickets to events for guests and employees. For additional information about the programs Parallelo offers visit: www.doppio-parallelo.on.net.

Facilitators

- West End and Greg Mackie. Greg is a very innovative person who began the West End precinct. Today, there are over 60 businesses involved in the West End area.
- A nice collection of Museums.
- The Festival State.

Barriers/Obstacles

- Created a culture that government will subsidize programs. Many citizens don't see it as their social responsibility to contribute money to the arts.
- People leaving the state.
- "Don't tell people" mentality, we don't want them to move here!
- Not celebrating successes.
- Many leaders in Arts Industry lack educational experience in entrepreneurial skills.
- Don't have a broker for the Arts.

Quotes

Notable quotes included:

- "Cultural Cringe"

AUSTRALIAN SUBMARINE CORPORATION (ASC)

Interview Team

- Celeste Yeakley, Team Leader
- David Schieck
- Eric Sloan

Who we met with

The team's main interview session was held on Friday the 13th July at the ASC with *Ross Milton* and *Robert Lemonus*. We were given a tour of the facility. They are just completing the 6th (and last) submarine currently planned for by the Australian government.

Opportunities

- ASC's software packages might allow them to be niche players. AGILE could be applied to other industries and commercialized with some marketing and business planning.

No Case Studies

Facilitators

- As part of the submarine program, ASC develop several software packages. One of them, AGILE, appears to be a software application that could be applied to additional industries and possibly commercialized.
- The submarine construction program has allowed ASC to develop a significant project management experience base.
- The submarines constructed by ASC will require many years of ongoing maintenance programs, that ASC is currently best qualified to provide.
- ASC has done some contract work in Asia for two patrol boat projects.

Barriers/Obstacles

- For a small country like Australia, international defense contracting offers significant challenges especially for larger contracts where there tends to be government to government negotiations which often require trading or linking together various cross-country business initiatives
- Navy contracts are different and more complex than commercial contracts because a foreign country wants to ensure continuing support
- No new Australian submarine contracts are anticipated in the foreseeable future
- ASC is currently undergoing a restructure after recently being nationalized.
- It is difficult to adapt their ship making process to the commercial market because of the high cost/high overhead facility due to government requirements
- ASC has a background in project management and design skills but lacks market strategy and a commercial sales skill base.
- Strategic marketing has not been a core competency.

Issues/Solutions

- Australian government will need to arrive at some solution that assures the long-term maintenance capabilities of the Australian submarine fleet.
- Retaining skills will be an issue due to significant staff reductions.
- Aligning with a larger company (which they've done some of already – ex. Compaq) will help get funding.

Overview

Business opportunities are lacking. Australia defense industry does not have a large customer base overseas. Selling to the navy is different than other commercial applications. They can't really go out and sell submarines to other countries. Example: the US would not buy from other countries where they could get cut off. They form alliances but don't want to be beholden to other country's policies. ASC does, though, work for the Thai and for the HK police on patrol boat projects.

It seems to be some linkage coming between US and Australia on the horizon (they have been talking about a joint venture).

The government recently bought ASC. The government has told ASC that they will be restructured and then sold. They are in a state of limbo right now, not knowing what their future is and needing to hold on to their knowledge base.

Issue: There will be an issue in retaining skills, they are one half to two-thirds the size they were a year ago and decreasing. If no work comes in, then they can't keep people and the knowledge base. The combat system is complex. They are currently in danger of losing key personnel and knowledge.

The Premier has to fix the problem of the lack of a plan. They need to have a plan to maintain the fleet and improve the software systems. There is one place in West Australia that could take up the expertise they have built in SA. SA needs a marketing approach to keep business here. Aligning with a larger company could help them to get funding.

MANUFACTURING

Manufacturing Interview

These notes are based on interviews with people knowledgeable of a variety of manufacturing industry information. The date of the interview was Monday, 9th of July, 2001. This is a compilation of notes from Nick Daley, Anna Hardesty, Simi Shonowo and Barbara Fossum.

Quotes

"Industry Development needs to be considered so important that it is taken off the political agenda"

Background of South Australian Centre For Manufacturing (SACFM)

- SACFM charter is to help technology companies accomplish outcomes better.
- SACFM is leaving areas of money making and going more into a consulting role to raise money for the portion of expenses not covered by the government funding.
- SACFM narrowed the base in mid 1990's to focus on Automotive, Engineering, Water development, Foundry and Tooling.
- They turn away lifestyle businesses that are not manufacturing related.
- Based on policy direction, SACFM's current priorities are the – Food, Electronics, and Water industries; alternate list: Auto, Metals, IT, and Biotechnology.

What SACFM does

- Roles – support manufacturing after Holden's headquarters moved.
- Help skilled shops grow to become small businesses.
- International bench marking for small companies in Australia.
- Expose small companies to the latest technologies to help them stay competitive – when the technology diffuses and becomes commonplace SACFM leaves the market.
- Facilitate small companies working together.
- Try to help bring together and manage the assets of manufacturing industry better.
- Promote the Manufacturing industry and change the image by utilizing: 'Manufacturer of the Year' award, manufacturing learning centers, and 'Make it in Manufacturing' campaign.

Case studies ideas

- Introduction of Rapid prototyping
- General Motors Holden Engine Manufacturing plant – lost opportunity
- Creating ATS for tooling companies to work together to win contracts as a group

Issues

- Industry should collaborate to create a national industrial policy, including industry mix.
- Need to change the image of manufacturing in South Australia because it employs about 16% of South Australia.
- No longer have many apprenticeships. Should there be a return of apprenticeships for the education in manufacturing?
- Setting Industrial policy direction is not as collaborative a process as it could be, between government and business groups.
- Need people with depth and breadth of information in technology industry (need to think in terms of the supply chain and long term instead of focus on the one trick that will make the company rich).
- Need to attract adequate management skill for the Manufacturing Industry to SA.

- Management is not very open to change.
- Have companies that are continually dependent on the grants that SACFM gives and not really interested in creating, developing, and maintaining mental and skill infrastructure.
- Manufacturing is focused only on big contracts – 4% of manufacturers with a lot of the jobs. This really leads to the issue that when one employer pulls out of the economy, a lot of jobs are lost. (There is no visible growth in the small manufacturing companies and there does not seem to be a push for these companies to be R&D focused – How could this be done?).
- Plants constantly under review because HQs moved to different cities.
- SA's base of Manufacturing is very narrow – dependent on Auto; SA produces more than 50% of Australia's automobiles and 28% of the country's automobile components.
- R&D component of the companies based in South Australia is lower than the Nation's average – related to the fact that the proportion of head offices in SA is lower.
- Not involved in commercializing technology. Acquire R&D by taking technology already available from other parts of the world.
- Affected by the survival mode political climate compared to the effective government (Asia & Europe); Legislation is a very big issue that creates barriers in this industry.
- Should SACFM become a different model?
 - Private company funded by government?
 - Return to original model of Proprietary Limited Company? (Now are part of dept of industry and trade).

Challenges

- There is not a broad industrial policy – in fact the SA Government selects the industries that will be the focus of resources.
- Basic manufacturing has been moved offshore.
- How to account for the environmental costs of manufacturing process, which seem to be the bulk of the expense incurred in manufacturing; Accounting for these costs as part of labor has been played up by politicians and the media as cheating the public.
- Reorientation of the industry – move from being in some other product to being innovative enough to create the technology that could be seen as very useful (back to changing the image of the company).
- Headquarters of the big companies are moving to other states. With little or no presence of head offices, plants are easier to close down in SA.
- Need venture capital available to those with good ideas to start-up businesses, much like it is in the U.S.
- Industry does not seem to be growing and upgrading their knowledge base. They seem to be looking more to the Government to fund programs to find and/or train people with needed skill sets. Industry does some of this but depends too much on government direction, funding and policy. There is very little risk taking in this area.
- Traditionally, product from the manufacturing industry has gone into products from other sectors so they are never visible to the end user and the manufacturing sector is easily down played.
- General move to centralize and consolidate resources to increase efficiencies of resources.

- Getting small and medium size businesses to develop better manufacturing processes.
- Speed to market with competition – critical mass related.
- Still have not addressed the issue of the declining supply of people.

Advantages of Manufacturing in South Australia

- 5% cheaper than Victoria for wages.
- Less baggage from the unions – better arrangements with unions.
- Tie into the expertise available by associations like CSIRO, TIFA.
- Desire not to do dirty manufacturing.

What they are good at doing

- Low volume Process Engineering.
- Defense Electronics, Science & Technology.
- Water processing techniques (Prophecy – name of the company).
- World class in R&D – need to look for niche opportunities not available elsewhere.
- Good manufacturing design base.
- SA fits the profile for New Product Introduction.

Shonowo's Follow-up Questions

- Can the schools pick up apprenticeships? (Use technical and vocational schools to train the talent needed).
- Can the country work together to pull the needed skills from the areas of the country where there is an excessive supply?
- Has South Australia sold itself nationally and internationally as a good place to develop manufacturing processes?
- Head offices have been used traditionally as a cost of switching. Is there any other way to build in a big switching cost for companies based in SA?
- Is there a way to keep resources wide spread and still be efficient? (Can SA develop business that could take care of support functions that are rooted in SA and use that as a sort of switching cost and a way to build in switching cost? Like the gentleman from GroPep said, "Build critical mass and a huge network so that even though the clusters are small, people will not feel that they will be out in the cold because they see other companies that can use the skills that they have." This is the third or fourth time that I have heard that not having industry clusters is hurting Adelaide – Santos employee in Adelaide mentioned better feel for oil and gas industry in Perth.)
- Can we grow the base of Manufacturing in SA beyond Automotive? What would it take to grow the base?

Daley's Notes and Questions with Answers

Q: Is there a way to attract R&D? R&D is critical and it leads to new processes. South Australia does not attract a great deal of R&D because it does not have many large corporate Headquarters where R&D is normally done.

Q: In what way is government standing in the way? Government gives funds with no expectation of success or accomplishment. Business needs to commit to certain goals and outcomes to qualify for further funding.

Q: What one idea would you like to see promoted that would help to more forcibly reach your goals/objectives? That would be to have a Management attitude that is receptive to change and not let government take the lead.

Q: How much of leadership role do you think your organization could take in generating more growth or less government involvement in business? We do not have any impact on the policy decision making of the government. We react to their priorities.

Q: What are the obstacles to your organization setting strategic direction locally, regionally, or nationally? Government sets policy and we react and try to convince companies to try the new processes.

Q: Where is your business focus? Medium to Large existing companies that are trying to get to the next level of maturity in business.

Q: Who have you turned away? Start up businesses because we are primarily interested getting already existing businesses to grow. The current charter is not to work with startups.

Q: If you had a 100X larger budget, could you spend it? No.

Notes:

There should be more of an attempt to secure State influence on making business policy decisions. We should attempt to collaborate rather than compete.

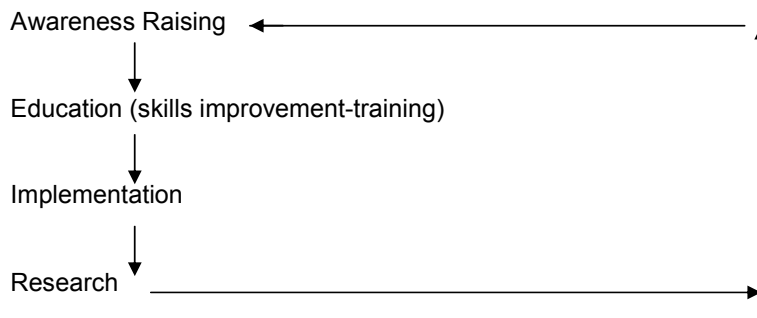
Australia uses the European defense and economic model in an effort to improve economic development. They do not emulate the US economic model because it's too extreme an approach because of the difference of political environments.

Hardesty's Additional Notes

SACFM's Role in Society

- Help manufacturers access the right technologies.
- Help them learn right management techniques.
- SACFM is the window to higher technologies.
- Have international partners.

A four-stage model for manufacturing



BRANDING ADELAIDE
July 12 , 2001

David Gibson, Barbara Fossum, Catherine Polito, and Pete Polonsky

Host Ron Tomlian , Adelaide Town Hall

Toward the East from Adelaide about 15 minutes is the ocean including Glenelg, Brighton, Henley, West Beach and several marinas and toward the West about 30 minutes beautiful hills, dramatic gorges, and wineries in The Barossa Valley. In the hills in zoos and in the wild is a broad range of wild life found nowhere else in the world such as: Kangaroos, Koalas, Wallabies, Wombats, and Emus. Running through the center of Adelaide is a long hike and bike trail that runs from the beach to the hills looping around the Torrens River. Sports attractions are also “exotic” by U.S., Asian, and European standards and include footie, cricket and the more standard tennis and golf. And these assets include more distant attractions such as Kangaroo Island, Murray River Country, Eyre Peninsula, Flinders Ranges and Outback.

The Festival State has numerous indoor and outdoor events including Festival of the Waters, Festival of 1000 Voices, Summer Sundays at the Bay, Adelaide Fringe Festival, Rock ‘n’ Roll Rendezvous, High Beam Festival, McLaren Vale Sea and Vines Festival, 2000 International Rose Festival, Glenelg Seafood and Jazz Festival and more.....While not as large as those in Sydney and Melbourne, Adelaide’s restaurant, entertainment, and pub scene has the qualities of similar technology regions such as Silicon Valley, Boston, and Austin, Texas.

Austin Visitors Assessment: **“No region in the world can match the variety and accessibility of Adelaide’s quality of life assets.”**

Adelaide Secrets (marketing theme) – the problem is that they are secrets – globally, nationally, and even locally especially in terms of the overall leveraging power of these considerable assets.

Adelaide: Perceptions and Branding

Perception is all there is

Quality of Life

A region’s quality of life is foremost in the opinions of locals and the perceptions of visitors and observers from afar. And central to these perceptions and opinions is **BRANDING**: how a region is marketed to its own citizens, to Australia, and to the world.

Regionalism needs to be emphasized as a general economic development strategy---

Example: A new video marketing the city does not feature or even mention the beach to the East, the hills to the West.

COMMERCIAL IN CONFIDENCE

Example: The Smart Business Development Strategy leads off with “The City of Adelaide consists of the square mile of the city, North Adelaide, and the Parklands...the goal is to increase employment in the city by 25% by 2010.”

What is the Greater Adelaide Region? Include and feature your assets that are near at hand and more distant (e.g., Kangaroo Island, Sydney, Alice Springs). When visitors come to Austin (e.g., start-up firms, relocations, technologists, students, smart infrastructure talent) marketing and recruitment is based on regional assets that feature the city's hike and bike trail and live music scene and extend to Lake Travis, and to the Alamo and River Walk in San Antonio (70 miles south).

Example: When marketing the city's businesses, training, and education facilities market the region as part of the package – especially if customers are potentially coming from a distance - potential U.S. customers selecting to visit Adelaide for a specialized or even standard training course are much more likely to take the time and expense to select Adelaide if there are add on benefits to the visit.

Adelaide the Festival City – how to BETTER leverage the numerous festivals

Near term Adelaide Conferences include the following: Peter Sellars Conference and World Congress on IT 2002

Annual conferences and festivals include: Jazz and Wine By the Beach

Get The Media On Board:

Adelaide's newspaper needs to “see the light” : Use as models Austin American Statesman Tech Monday or the San Jose technology sections/stories – we are not talking PR here but good analyses of regional technology assets such as Thebarton Commerce and Research Precinct and emerging companies (e.g., bio tech) and local heros (e.g., Vilis Pies)/

Find and work with a TV and Radio that will see that it is to their benefit (e.g., larger audience) to feature Adelaide's emerging entrepreneurial culture and technology-based businesses. News needs to be objective to clarify challenges and celebrate successes.

Adelaide is a nice city but there are many nice cities in Australia to attract national entrepreneurial talent and many nice cities in the world to attract global talent. But it is the opinion of the authors of this report, that the Greater Adelaide Region is globally competitive in terms of the availability and accessibility of quality of life assets.

Entrepreneurial assets and resources while considerable are poorly leveraged and marketed. The dominant theme seems to be “patch protection”

Tall Poppy Syndrome

Ways in which the Tall Poppy Syndrome inhibits entrepreneurship:

- Not expressing/advertising how good others are – not celebrating others successes
- in which the Tall Poppy syndrome inhibits Adelaide's entrepreneurs
- Not expressing/advertising how good you are Fostering a culture of blame
- No one is allowed to win

"Oh yeah, but you know that's part of the game. Call it what you like but once you get up on top people will knock you off – but at long as you get up and start climbing again they will get behind you."

Paul Hogan, Who Weekly, April 9, 2001

Adjectives used by folks from Adelaide to describe the Austin visitors: and Austin's entrepreneurial environment

- Optimistic
- Positive
- High Energy
- A Can-Do Attitude

What are the international perceptions of Adelaide? South Australia is seen as a geographic location, not a State.

Adelaide Negatives/challenges:

Only cities on world's radar are Sydney and Melbourne

1993? State Bank Collapsed – disaster for business and psyche, govt. shed staff

Adelaide the place to retire.

Negative perceptions (within Australia) as a place of business and investment opportunities – the "last place" to invest in business opportunities or start a business – hard to achieve sales, low margins, hard to recruit and retain talent/staff, low business confidence in Adelaide, high transportation costs, Focus group held by city the conclusion was that "there are NO positives related to business"

Perceptions by public and private professionals who live and work in Adelaide include the region being a place that is difficult to recruit and retain technology firms and talent, entrepreneurs and mid-career professionals, and to grow globally competitive firms.

Adelaide "slowly" coming back, still cautious, still losing its youthful population, still no belief of the future of Adelaide, culture of modesty and lack of promotion, very skeptical of hype -

Adelaide assets:

30 Years of Festival of the Arts

City of churches – with the right spin a city of tolerance and diversity

City of parks

Beautiful coastline

Barossa Valley – vineyards – won national wine center

Heritage and architecture

Natural beauty, hills

COMMERCIAL IN CONFIDENCE

Accessibility

Easy pace of life

Civic infrastructure:

History of social progressiveness: 1st to give women the vote, 1st to give Aborigines the vote and right to own land, 1st to decriminalise homosexuality

Unusual animals (in terms of world):

Unusual sports (in terms of world):

Theme/Tag Line for Adelaide:

1994 – “South Australia, Going All the Way” – a disaster

More Recently

- City of Creative Imagination
- City of Light and Style
- The Gateway Place
- The Learning City
- City on the Move (to where?)

IC2 Suggestions

- City of the Tall Poppy
- City of Entrepreneurs
- City of Opportunity

CIVIC LUNCHEON

By Barbara Fossum, David Gibson, John Hunt, Adrienne Hughto, and Simi Shonowo

INTRODUCTION

A cross section and wide variety of representatives were at the civic luncheon to address issues of civic assessment that can impact technology development and entrepreneurial growth in the region. The IC2 team encouraged self-examination of attendees with directed questions and comments without leading dialogue or commentary in order to encourage the introspective atmosphere. Self-criticism also was encouraged in order that the analysis would be more productive in correcting areas that might be weak and make the overall network stronger. It was noted by the IC2 team that the members were exceptionally active in a wide variety of high profile civic activities, supplementing professional expertise with heavy involvement in the community.

Strengths

- SA Great and its role as catalyst and facilitator to build confidence and boost pride in South Australia
- Council works building partnerships with purpose of stretching goals, capacity, vivacity, and audacity.
- Strong networks and collaboration by government with business in many areas
- Business Vision 2010 in collaboration and links with various sectors including clusters meetings.
- Premier's Business Round Table – Premier meetings with business leaders.
- WCIT 2001 – marketing and branding for the Adelaide area.
- With technology even small organizations can make an impact, remoteness of South Australia is now less of an issue.
-

Weakness

- Rapid paces in industries make it very hard to get the right people together in bigger cities.
- Multitude of councils in government promote confusion for businesses and inefficient processes due to overhead.
- General reluctance to embrace some of the fundamentals of collaboration.
- Scheduling and confusion often impedes collaboration
- When State government is involved it could have too much in outcome of how things actually get done.
- Reluctance of government to publish successes due to perceived negative public perceptions of political self-promotion.

Opportunities

- People with vision should not lose focus of keeping quality in products and services
- Focus on making quality products and services would build confidence and improve image of region.

COMMERCIAL IN CONFIDENCE

- Engaging business and community partnerships with special interest groups (SIG) on voluntary basis.
- Focus on collaborative business groups for creative solutions to common problems and strategic directions.
- Promotion of connectors – people who go out into business community from the government and vice versa to make people connect on strategic levels.

Threats

- Heavy involvement by government in funding and leadership can promote business leaders to stop leading.
- The multitude of councils in government promote high peer competition.
- Network collaboration and meetings can slow down result achievement in entrepreneurship

Issues

- Should the government need to be active in business community taking risks and investing?
- On overseas customers - What would make them come all the way here?
- Does collaboration really happen when people get together?
- Need new and innovative role models in entrepreneurship.

Great quotes

- Take action in problems rather than indulging
- There is a need to understand leveraging, because if one wants to survive in business, one had better be good
- People that are major role players should pull back and let other people take credit (to promote entrepreneurship).
- The constant movement of technology means even– the city state is just disappearing.

Porters 5 Forces

Risks by New Entrants

- High – Political instability indicates change is imminent

Degree of Rivalry Among Established Entities

- High – Multitude of councils are competitive

Bargaining Power of Buyers

- High – Many options are available
-

Bargaining Power of Suppliers

- High – Funding/leadership by Government made position prominent.
-

Threat of Substitutes

- Low – New entrepreneurship is encouraged

NOTES FROM MEETING

Margaret Caust, Capitol City Project Team

(Margaret hosted the meeting with introduced participants) You can have excellence in any one sector (but focus needs to be wider to get the bigger picture). There is a need for coordination and people have been brought in from a range of areas to see where there are gaps and are strengths.

Roseanne Healey, CEO of SA Great– SA Great was started by the media to act as a catalyst and confidence driver for South Australia. It was done through television, paper and combined media in order to leverage confidence and boost pride in South Australia. They have gone to the effort to make it more project-based in the last four years and have also put together events to boost confidence. To show business people to get more connectivity out of the region in terms of growth potential and working with the world. It acts as a catalyst and facilitator to get information out to what people are doing so people become proud. This is a membership-based organization that puts on events and activities, going to the government and private sector while trying to be nonpolitical (NOTE: there is a website for this organization at <http://www.sagreat.com.au/>)

Sue Filby, General Manager, City Assets

Works with hard infrastructure – commercial business aspects, car parks, golf, and combination of council. Released a vision for Adelaide in last few years aimed at doubling the cities population within the next ten years. Council likes to build partnerships, stretching goals, capacity, vivacity, and audacity. Have big challenge ahead.

Tony O'Malley, Consultant Business Development works with Business Vision 2010 Stated that essentially the purpose is leveraging people to take action in problems rather than indulging. What can one observe in regions – remote regions in Australia forget the distance with huge untapped high value tourism not tapped into at all. The business community stops leading, and lets leadership of economic development fall to the government. A major issue is - does the government need to be active in business community taking risks and investing? On regional businesses in South Australian contact with high value customers overseas. Why would they come all the way here? What usually gets forgotten is end user. It is hard to keep track of changing needs of end user. People with vision should not lose focus of keeping quality in products and services.

Dave Gibson, Professor, University of Texas at Austin

In working with the IC2 Innovation Creativity and Capital the focus and objective is to build wealth and share prosperity while building jobs.

Bill Anschutz

Auto and political background, worked with sister city committee, four years ago took an assignment as champion for guidelines for good business practice project. He believes there is a need to establish fundamentals and framework for business practice. Now have strategic direction for people to improve. Benchmarking system would be of interest to compare business across world, and putting this online. Want to have this ready for World Congress on IT in March. There is a need to understand leveraging, because if one wants to survive in business, one had better be good.

John Hunt, MSSTC Graduate Student from the University of Adelaide

COMMERCIAL IN CONFIDENCE

John works with consultancy reports on economic development in his business work. He perceives the understanding of the migration of economy from knowledge-based economy is important to Adelaide. The main things he picked up from the MSSTC course that are lacking are things that can't be touched like teaming. Hopefully this project will bear some fruit, and bleed into the Adelaide Region.

Terry Tysoe, Department of Administrative and Information Services, Major Projects
Mr. Tysoe works across the government facilitating projects, like work with industry and trade. He states networks and collaboration bring out strong points of this government. He notes that it is very hard to get the right people together in bigger cities.

Ian Harrison, Chief Executive, SA Business Vision 2010
Business is about collaboration to bring together various sectors. Members of the incorporated body are leaders in their own sectors, with a wide variety. They have links with others on a broad scale. Business Vision is sort of a meeting ground, because there are no boundaries on business vision. There were 560 people that came to the clusters meeting last week. Many are touching business vision to get knowledge in a loose confederation.

Peter Smith, Strategic Consultant, Defense and Aerospace.
Mr. Smith is also a weekend job wine grower in the Barossa Valley. Feels that it is important to put a day a week back into voluntary activities to develop networks. He believes working on multiple committees has broadened his focus (i.e. on council on UA, vocational training board, chair Adelaide metropolitan consultant committee)

Thoughts were presented that included:
A valuable asset is the Premier's Business Round Table – Premier meets with business leaders in Adelaide
Expertise and assistance from forums would be too costly to buy
Broader commitment and interest in community is needed.

OPEN DISCUSSION

Bill – says Austin gets together with State government, council. He would like to see local government follow this example more. He believes there is too much competition here, with many too many councils.

Other - Government is about retaining power, want credit for retaining power. Views of local governments are generally - households first, business last.

Terry – Wants a focus on strategic issues. Structures are not as important or as interesting as are things that are actually happening. Collaboration is almost a contrast to entrepreneurship where you just go out and do it. Often there are too many meetings, and talking can keep people from doing things.

Ian – Funding basis is usually half private and half public. He would like to see the funding basis much larger on the private side. He has noticed a reluctance to embrace some of the fundamentals of collaboration. The issue must improve so there can be significant desegregation. Many businesses probably try to collaborate but get lost in the woods. Most get too busy to collaborate often.

Roseanne – Still need disciplines to make agenda. Does collaboration really happen when people get together? There is a need for some education for the stakeholders. When State government is involved, they have too much in outcome of how things actually get done. She has noticed some frustration because there is a need for some example of people to stand out.

Dave Gibson – People that are major role players should pull back and let other people take credit.

Peter Vroom – There are two things to contemplate – a moving picture and attitudinal problem. There is a constant movement of technology which means even small organizations can play out of here and make a difference in the world – the city state is just disappearing. Three universities are working together with a great deal of collaboration, but it is not into the region's level of infrastructure.

Margaret - Notes on a positive attitude – it is easy for citizens of Adelaide to get pessimistic and not have a positive attitude – want to be self-aware. A problem for the government is when it presents self-promotion on successes it can look like a spin and not be accepted well.

Tony - Need affirmation with focus on quality products to say what a great job SA does. Making quality products would build confidence and improve image of South Australia. Outback tourism is most under utilized

Sue Filby – There should be not only scope for engaging business but also community partnerships and engage interest groups. This takes courage when looking for voluntary partnerships

Bill is working on getting business groups together, so people get together and find out that others have problems. They often think they are isolated, but find others have or have had the same or similar problem and can find creative solutions. A benefit of this is most credibility comes from peers. People start to expand knowledge especially strategic direction

Ian –(addresses negative issues facing South Australia) – In general the role government is at very high level and too big of a player. This has had a dampening effect across Australia, because of economic fallouts etc. It is very prominent at this time of political instability and lack of control in the upper or lower house. Because the Government has had this bigger role, it has been cancerous on society since there is currently a period where the Government has actually become less effective. With the difficult election soon, the party in power is even split at its own level. The cause and effect is a tremendous response by people in respect to doing reinvention.

Margaret – There is a tendency for the business government relationship where government seems to revere business, but business seems to feel the Government gets in the way. There should be connectors – that is people that go out and make others connect. There is especially a need more of that within the business environment.

CIVIL INFRASTRUCTURE

INTRODUCTION

The Civil Infrastructure meeting was conducted on Thursday 12 July 2001 at 2:00 in the afternoon. The Austin delegation of the Greater Adelaide Knowledge Hub Project met with a cross section of officials through the venue of the Department of Industry and Trade. Urban Planning and SA Water were represented as well. The meeting was hosted by Steve Ward (Dept. of Industry and Trade). It was decided to keep the meeting informal and concentrate as a focus group to address key issues in a short span of time (3 hours). The Austin group provided questions designed to stimulate self-analysis by Adelaide officials of priority issues. This report is not meant for general circulation but as a learning tool for persons involved in the meeting, as well as providing a basis for the Greater Adelaide Knowledge Hub Project report.

IN GENERAL

General comments raised during the discussion process raised varied issues, which are summarized in the following paragraphs.

Railway, light rail (i.e. tram), and bus are all provided in the Adelaide area. Transport SA is the main roads / transport planning entity. Land use planning is driven through a state system supported by localized (local government) planning consistent with statewide strategies. Strategies and localized plans are regularly reviewed and updated (on a two or three year basis).

Australia is characterized by a high level of urban development in several coastal locations, spread out between main cities especially when compared to the European Union. Of those that use public transport every day to travel to work, some 2/3 or 21,000 people travel to city jobs (90,000) while the other 1/3 or 10,000 travel to the bulk of the jobs (313,000) scattered throughout the metropolitan area. Of the 90,000 people employed in the city in 1996, some 53,000 traveled by car versus 21,000 by public transport.

ISSUES

The (1960's) Metropolitan Adelaide Transport (MATS) plan and subsequent land use planning defined the direction of urban sprawl. Major freeway systems (e.g., a North South freeway) were envisaged. However the issue of precious gardens, vineyards, and important bits of agricultural land had to be dealt with along with changing community attitudes to the impacts of mass freeway systems dissecting communities. Government was intimately involved in infrastructure provision. The cost and maintenance of a system involving urban sprawl is a lot more than a centrally located city.

Today there are many interesting discussions of urban transport in Adelaide. Traffic congestion may actually be a good thing because it may get people to use public transport. A key issue for government in these debates has been the role of public transit systems – are they merely a social justice tool for those unable to afford their own transport or are they a mass transit means?

This paper identifies strengths, weaknesses, opportunities, and threats that are encountered in the Greater Adelaide Areas by the Civil Infrastructure Group. They have been categorized and itemized for ease of identification. Each is addressed individually,

where appropriate and suggestions for improvement are noted from the Civil Infrastructure Group and the IC2 team.

STRENGTHS

1. Growth: There has been a discernible about turn in urban sprawl. People want to live in the café city including suburbs close to the city (last 5 or 6 years) so land has become valuable in the city and adjacent environs. To that extent, sprawl has slowed to a ½ or 1/3 of historic levels.
2. Capacity planning: There are examples of wise infrastructure investment that is 'fit-for-purpose', e.g., the Southern freeway is an example of a reversible road to cater for morning and evening peak traffic flows when traffic flows one direction during predictable time periods.
3. Quality of living: The quality of living is exceptional in Adelaide. Adelaide has reasonably priced houses (...but land is increasing in value in the city) and good cultural amenities.
4. Adelaide has more parking lots (car parks) per capita than any other Australian city. The numbers of car parks in Adelaide have proliferated to the extent that Adelaide is now a city with one of the highest ratios of spaces per workers in the world (443 spaces per 1,000 workers) up to double that of other Australian

Capital Cities.

| City | Melbourne | Sydney | Adelaide | Brisbane |
|-----------------------|------------|---------|----------|------------|
| CBD Employment | 144,203 | 193,000 | 73,868 | 77,490 |
| CBD Spaces | 40,963 | 38,000 | 32,782 | 29,988 |
| Spc/1000 works | 284 | 196 | 443 | 387 |

This compares to an average of 211 parking spaces per 1000 city workers in 12 of Europe's largest cities, 198 in Toronto and an average 380 in the 10 largest American Cities.

Adelaide's car dependence is high compared to other cities:

| City | Melbourne | Sydney | Adelaide | Brisbane |
|------------------------------------|-----------|--------|----------|-------------------|
| Mode Split (work) car/other | 37/63 | 20/80 | 67/23 | 51/49 (all trips) |

5. A world-class O'Bahn system (O'Bahn is a guided bus way that uses little side wheels to guide the bus while traveling on the O'Bahn allowing it to travel at high speed safely viz. 100 -120 Kph).
6. Congestion Related: Generally roads are able to get traffic across town in an efficient and easy manner – Adelaide is often referred to as the 'twenty minute city'. As the city is sprawled, traffic does suffer. Public transport is actually starting to grow because people are moving back, so congestion in certain locations actually encourages people to use the bus. They have clearways for freight to help with congestion. Population growth has dropped as well.
7. Water and land: It is an across-the-border issue for South Australia

- Wine industry is a good economic success. In several areas there are examples of dry land farms being converted through sustainable irrigation to wine growing areas. Examples of the wine industry self funding pipeline systems to utilize wastewater from government wastewater treatment plants exist – a win-win for all parties, e.g., a waste flow has been captured to convert farm land to a higher and better use – economically all parties are better off. Elizabeth, a suburb to the north of Adelaide was built on manufacturing (motor vehicles). The southern area lacked a vibrant manufacturing base but the wine industry has developed and provided a good jobs base. In general, South Australian wine is brilliant quality for its price in world terms. The issue for future wine production - is there enough water and suitable land?
 - Unique use of valuable water resources and its aquifer storage - Aquifer storage involves using an underground aquifer to store water in the off peak use but high inflow period (i.e. winter). On the Northern Adelaide Plains this technique is being applied in a very productive vegetable growing region. Similarly, in the Barossa Valley, a premium wine growing/processing area the technique is being applied. Licensed water is transported out of the Murray (the whole of the Murray is licensed) using a potable water supply pipeline during the off peak water use period. Users buy water out of the Murray, transport it down pipelines to the destination site or close to it. The grape growers traditionally used ground water that was becoming depleted and aboveground storage is costly and suffers from evaporation in summer. Therefore, they put most of the transported water into aquifers in the winter to be used in the summer months. The water must be equal or better quality than drinking water – the water is chloraminated (disinfected with chlorine) and filtered - ASR is the term utilized – Aquifer Storage and Recovery. Further North is the Clare region and similar processes are being considered.
 - Success with waste and storm water recycling. Mawson Lakes utilizes dual pipelines underground, owned and operated by SA Water, to reuse gray water. This is the first time wastewater and storm water have been joined together for recycling. Storm water discharge can be a significant environmental problem in its impact on coastal environments. Mawson Lakes uses a wetland system that captures the water, slows its speed allowing suspended solids to settle and then by biological activity it is cleaned up. New wetlands and recreational areas are the outcome.
8. Technology: Against National and International competition, Adelaide rates as well connected compared to other cities.
- The government via Telstra laid Fiber Optic Cables. Telstra is partly privatized, with 49.9% of the shares (in Telstra) having been floated.
 - Telecommunications include many small scale ISP's (about seventy-eight to eighty). SA leads the country in Internet uptake on a number of measures. Attached is a statistical compilation by Mr Bert Stock, statistician attached to the SA Government Information Economy Policy Office (IEPO) showing a comparison between SA and the other states.
 - Good morale factors associated with IT&T including personnel feel they have world-class infrastructure in terms of communications, and in some ways the Adelaide area thinks ahead.
 - Mobile telephones are well connected in metropolitan areas.

- World IT Congress (in Feb. 2002) is seen as a boon to project Adelaide area as a forerunner.
- All state schools are connected.

WEAKNESS

1. State and Federal government oversee the highways. Traffic volumes are reasonable, but does get a bit congested. It was mentioned that work could be done to have clever road management systems to relieve peak period congestion without building additional road capacity.
2. Public transport has been privatized with promises of improved efficiency etc. But, now the bus does not seem to ever run on time. In the past, the majority of passengers were professional people, now there are mostly kids riding. It was clean, efficient, and ran on time. Now it takes thirty minutes between schedules even though eighteen minutes are scheduled. The advertising is not matching up to reality and people are voting with their cars. As a result, new initiatives to improve service levels have been introduced; e.g., the '15 minute Go zones' whereby you can be sure of a bus within 15 minutes. In addition, specialized bus services for events such as the Royal Show and Football Park football have been introduced.
3. In certain areas there is only a limited amount of road space due to heritage regulations that constrain road space.
4. Peak hour parking regulations are noted as causing a problem. They stop at 6pm, so zones allow people to park on street on main roads, which can cause congestion.
5. Most industrial land is up North of the city; there is also significant population in the South so everything gets 'funneled'. Planning should address this issue.
6. Financially restrained – many big ideas but not able to deliver. Budgeting and planning should include consolidation, prioritization, and bootstrap techniques.
7. Australia rates poorly on broadband access. Telstra is reluctant to roll out ADSL, because it is expensive to the home user (\$90.00 AUD a month). In CBD (central business district) the fiber network etc. is good. Because of a prevailing conservative attitude, cable rollout stopped, so only forty percent of Adelaide is cabled. Therefore, Cable TV never took off here. Online shopping on TV or PC never took off like in the USA. It is thought that maybe this is culturally ingrained. When cable TV came out, at a cost of about \$50 AUD, many people cancelled. Laws prevent major sporting events from being shown exclusively on cable. As a result some events have to be shown on free to air due to this culture, but you must pay to get any film. The analogy in America would be that the National Hockey League is pay, but local games are free. Other areas for high speed access should be explored, particularly in the wireless arena. Costs of wireless are rapidly coming down, it does not require legacy copper infrastructure, mobility is increased, and existing building structures are not impacted.
8. Some concerns in telecommunications are about a community that is getting older.
9. For telecommunications - being middle of the country is a disadvantage because you are dependent on exit points for submarine cables – Perth and Sydney. This needs more in depth assessment.

10. Telecommunications – They feel that it is a fairly competitive market (comment from Adrienne – think it could be a lot stronger with room for competition to drive prices down) consisting of half a dozen carriers (two based in Adelaide - AGILE and Airnet). Telstranet was owned by the government but 50.1% was sold. There are four carriers with national operations: Telstra, AAPT, Vodafone, and Optus. Access is very difficult and duplication a problem. Also, legalities are discouraging for introducing competition. Competitors find it difficult as Telstra was once government owned and there are still many protectionist clauses.
11. Telecommunications – They feel the need for more knowledge workers. There is also a general sentiment that because Adelaide is smaller than Sydney or Melbourne, it is thought to be substandard.

OPPORTUNITIES

1. The use of smart signs in the area to redirect road traffic when one direction is congested.
2. An area of concern is the linear development north to south spinning over into high amenity areas. The resulting sprawl requires attention to planning as well as funding to maintain an efficient road system that will not become congested as the city grows.
3. Now that bus system is privatized, the city government could become involved through cooperative regulation efforts to make it the most efficient bus system. They can work with the private ownership to help make scheduling to where people can set their watch times by bus schedules. This is the crucial and initial step that must be done, then a campaign to set a more professional image to attract the businessperson back to the bus.
4. Re-zoning to limit parking on main roads during peak hours traffic flow so that traffic is less congested should be considered.
5. Look at other US cities that have had population decline and where the GSP actually went up. It was stated that they are looking to these cities for direction.
6. There seems to be confusion in the transport system. It is a world-class system, but one has to stand on footpath in the rain (suits get wet). The result, is one would rather use a taxi. There needs to be a provision to pick people up.
7. Electricity is the area of big change. This is because of the rapid development and roll out of national electricity market protocols. Adelaide is also relatively isolated and stands alone from the national electricity market with limited connectivity to it.
8. Wind farm potential appears good because of current high electricity prices, and good winds at some locations. Recent two hundred year leases on electricity assets have been followed by periods of higher electricity prices. Note that the higher electricity prices are a function of generation capacity and other market developments, not only the privatization process. There has historically been over investment by the government that is now, after years of over supply, being used up through naturally increasing demand for energy. There are limited examples (due to the economics) of people installing some solar generation technology. They could be selling energy back into the electricity grid in the future.

9. Because people are moving back into the city, the need for the freeway system is not pronounced any more. The challenge will be to squeeze more cars within a given space.

THREATS

1. Some issues include capacity within the inner city and the privatization of utilities.
2. Do not want bus system like Melbourne (felt to be kind of scary). Most of jobs are in the central areas.
3. For economic development, need industrial land, but increasingly industrial land uses are being very restricted (100m buffer zones etc). There are constantly more residential encroachments into industrial land. The planning system does not seem to take this into account.
4. There is a big divide among the Greater Adelaide Area in regard to a development strategy. Should the goal be 'world class' or 'maintain status quo'? Hard decisions must be made for strategy development.
5. For industry – is there enough water and land? Sustainability of current water harvesting from the Murray system is key. Areas of underground water depletion are also evident. In terms of water use in the state, 2/7 is used by residential or industry with the balance in irrigation. A good trading system for water rights is critical – irrigators tend to pay very low volumetric water prices and some using massive amounts are paying very low volumetric prices. Strategy planning for how to allow high value added agriculture and irrigation to grow is crucial.
6. There is a current process that is developing concepts of how North Terrace will look and be used into the future, backed by significant capital spending to improve the built form of the public spaces along North Terrace. The State needs to look at industries that are location independent like auto or computer chips.
7. Lack of jobs is a big problem, but natural attributes are good. The City of Adelaide has enormous intellectual capital. Adelaide is regarded as a university city but people leave because the jobs are not here. A statement made that Adelaide was attractive to grapes but not people for immigration. Need other industries and jobs to keep kids here. Studies of cities that have similar size and resources that are economically viable can be of benefit.

CONCLUSION

The personnel at the meeting were very well informed, keenly aware of current issues facing the Greater Adelaide Area, and not only interested, but very committed to making improvements in their areas of responsibility. They are a credit to government and should be commended for their courage and involvement in this study. The strengths and opportunities show Adelaide to be a vital city. The success stories illustrate how many hurdles have been overcome with intelligent diligence. The weaknesses and threats are real, can be difficult, but are usually best overcome when treated by identification and applying strategic planning. This document will make an excellent resource for strategic plans due to the critical nature employed and the regional area will benefit. Overall, on reviewing the document it is demonstrated that impressive progress made in the past has staged the area well for future growth.

COMPARISON TABLE

The following comparison table was prepared by Mr Bert Stock, statistician in the SA Government Information Economy Policy Office (IEPO).

Australia, States & Territories - Whole Areas

| | Australia | | | NSW | | | Victoria | | | Queensland | | | South Australia | | | Western Australia | | | Tasmania | | | Northern Territory | | | ACT | | |
|---|-----------|------|-------|------|------|-------|----------|------|------|------------|------|-------|-----------------|------|-------|-------------------|------|-------|----------|------|------|--------------------|------|-------|------|------|------|
| | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ |
| Have a home Personal Computer | 55.4 | 59.5 | 4.1 | 54.7 | 58.3 | 3.6 | 58.8 | 62.6 | 3.8 | 51.7 | 56.2 | 4.6 | 53.5 | 59.3 | 5.8 | 56.7 | 60.8 | 4.1 | 48.3 | 51.8 | 3.5 | 55.9 | 58.3 | 2.3 | 73.4 | 77.9 | 4.6 |
| Total ever accessed the Internet | 47.8 | 57.3 | 9.5 | 45.9 | 56.7 | 10.8 | 51.0 | 58.0 | 7.0 | 44.4 | 55.2 | 10.8 | 47.9 | 57.1 | 9.1 | 48.4 | 58.1 | 9.8 | 46.0 | 56.7 | 10.7 | 56.6 | 65.9 | 9.4 | 71.6 | 77.8 | 6.1 |
| Have a home Internet Connection | 29.2 | 40.3 | 11.2 | 29.2 | 41.0 | 11.8 | 30.8 | 40.6 | 9.8 | 25.7 | 37.5 | 11.8 | 28.1 | 41.5 | 13.4 | 30.3 | 40.4 | 10.1 | 25.3 | 35.0 | 9.7 | 30.8 | 39.7 | 8.9 | 46.5 | 57.2 | 10.6 |
| Access the Internet from Home | 23.1 | 31.9 | 8.7 | 23.4 | 32.4 | 9.0 | 24.1 | 31.9 | 7.8 | 20.6 | 29.6 | 9.0 | 22.2 | 33.2 | 11.0 | 24.2 | 32.9 | 8.7 | 19.4 | 27.4 | 8.1 | 26.4 | 31.0 | 4.7 | 35.2 | 39.8 | 4.7 |
| Frequent User (at least weekly) | 30.8 | 39.3 | 8.5 | 30.1 | 38.7 | 8.6 | 33.8 | 40.8 | 7.1 | 26.8 | 36.0 | 9.1 | 28.4 | 38.5 | 10.1 | 30.6 | 40.8 | 10.2 | 29.4 | 35.8 | 6.4 | 38.6 | 43.7 | 5.2 | 58.0 | 65.1 | 7.1 |
| Use the Internet for e-mail (of main uses) | 26.1 | 43.4 | 17.3 | 26.1 | 42.4 | 16.3 | 27.9 | 44.5 | 16.6 | 22.3 | 41.0 | 18.7 | 24.7 | 43.7 | 19.0 | 26.5 | 44.6 | 18.1 | 25.7 | 42.4 | 16.6 | 37.1 | 49.8 | 12.7 | 42.0 | 65.7 | 23.7 |
| Shop/bank on Internet (of main uses) | 2.7 | 14.1 | 11.4 | 3.1 | 14.7 | 11.6 | 2.7 | 14.3 | 11.6 | 1.6 | 11.8 | 10.3 | 2.7 | 12.8 | 10.1 | 3.2 | 16.4 | 13.5 | 1.7 | 10.4 | 8.6 | 1.7 | 17.3 | 15.6 | 8.1 | 23.7 | 15.6 |
| Unlikely to access Internet (next 6 months) | 51.1 | 40.7 | -10.4 | 52.0 | 40.9 | -11.1 | 47.5 | 39.4 | -8.1 | 54.5 | 43.7 | -10.8 | 54.5 | 41.8 | -12.8 | 53.1 | 40.0 | -13.1 | 50.6 | 43.3 | -7.3 | 45.8 | 33.9 | -11.8 | 25.7 | 22.5 | -3.2 |

Australia, States & Territories - Metropolitan Areas

| | Australia | | | NSW | | | Victoria | | | Queensland | | | South Australia | | | Western Australia | | | Tasmania | | | Northern Territory | | | ACT | | |
|---|-----------|------|-------|------|------|-------|----------|------|------|------------|------|------|-----------------|------|-------|-------------------|------|-------|----------|------|-------|--------------------|------|-------|------|------|------|
| | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ |
| Have a home Personal Computer | 59.5 | 63.0 | 3.5 | 58.5 | 62.7 | 4.2 | 62.4 | 64.4 | 2.0 | 56.5 | 58.4 | 1.9 | 57.7 | 62.2 | 4.5 | 60.2 | 66.0 | 5.8 | 54.5 | 60.6 | 6.2 | 54.1 | 57.1 | 3.0 | 73.4 | 77.9 | 4.6 |
| Total ever accessed the Internet | 53.2 | 62.2 | 9.1 | 50.7 | 62.9 | 12.2 | 57.0 | 62.3 | 5.4 | 49.5 | 58.1 | 8.6 | 52.8 | 59.9 | 7.1 | 54.1 | 63.4 | 9.3 | 53.0 | 64.9 | 11.8 | 56.8 | 67.8 | 11.1 | 71.6 | 77.8 | 6.1 |
| Have a home Internet Connection | 33.5 | 45.1 | 11.6 | 33.8 | 47.1 | 13.3 | 35.1 | 43.7 | 8.6 | 29.1 | 40.4 | 11.3 | 32.4 | 44.7 | 12.3 | 33.8 | 45.9 | 12.2 | 31.6 | 43.8 | 12.2 | 29.8 | 39.1 | 9.4 | 46.5 | 57.2 | 10.6 |
| Access the Internet from Home | 26.3 | 35.3 | 9.0 | 26.5 | 37.7 | 11.2 | 26.7 | 33.8 | 7.2 | 23.9 | 31.1 | 7.2 | 26.2 | 34.9 | 8.7 | 27.0 | 36.6 | 9.6 | 24.0 | 34.0 | 10.0 | 25.9 | 30.7 | 4.8 | 35.2 | 39.8 | 4.7 |
| Frequent User (at least weekly) | 36.0 | 44.6 | 8.5 | 34.9 | 45.4 | 10.5 | 39.5 | 44.8 | 5.3 | 31.4 | 39.7 | 8.3 | 33.1 | 42.1 | 9.0 | 35.7 | 45.2 | 9.5 | 35.8 | 46.2 | 10.4 | 39.4 | 45.2 | 5.8 | 58.0 | 65.1 | 7.1 |
| Use the Internet for e-mail (of main uses) | 30.9 | 48.9 | 18.0 | 30.8 | 49.3 | 18.5 | 33.3 | 49.5 | 16.2 | 25.5 | 43.8 | 18.3 | 28.7 | 47.1 | 18.5 | 33.8 | 50.8 | 17.0 | 31.2 | 51.3 | 20.0 | 36.9 | 51.0 | 14.1 | 42.0 | 65.7 | 23.7 |
| Shop/bank on Internet (of main uses) | 3.4 | 16.9 | 13.5 | 4.0 | 18.3 | 14.4 | 3.4 | 17.2 | 13.8 | 1.6 | 12.4 | 10.7 | 2.7 | 14.7 | 12.0 | 3.7 | 19.5 | 15.9 | 2.5 | 13.0 | 10.5 | 0.0 | 18.2 | 18.2 | 8.1 | 23.7 | 15.6 |
| Unlikely to access Internet (next 6 months) | 46.3 | 36.0 | -10.3 | 48.0 | 35.2 | -12.8 | 41.6 | 35.4 | -6.2 | 50.4 | 40.8 | -9.6 | 50.9 | 38.4 | -12.5 | 45.9 | 34.4 | -11.4 | 45.6 | 34.2 | -11.4 | 45.0 | 31.7 | -13.4 | 25.7 | 22.5 | -3.2 |

Australia, States & Territories - Outer Metropolitan Areas

| | Australia | | | NSW | | | Victoria | | | Queensland | | | South Australia | | | Western Australia | | | Tasmania | | | Northern Territory | | | ACT | | |
|---|-----------|------|------|------|------|------|----------|------|------|------------|------|------|-----------------|------|-------|-------------------|------|-------|----------------|----------------|----------------|--------------------|----------------|----------------|----------------|------|---|
| | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ |
| Have a home Personal Computer | 54.9 | 59.8 | 4.9 | 54.1 | 54.1 | -0.0 | 58.5 | 65.7 | 7.2 | 46.3 | 54.6 | 8.3 | 48.1 | 58.2 | 10.1 | 59.8 | 62.8 | 3.0 | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | | |
| Total ever accessed the Internet | 44.8 | 54.5 | 9.7 | 40.4 | 48.5 | 8.1 | 49.6 | 58.0 | 8.3 | 40.7 | 51.4 | 10.7 | 28.1 | 50.3 | 22.2 | 49.8 | 61.2 | 11.5 | | | | | | | | | |
| Have a home Internet Connection | 28.3 | 39.2 | 10.9 | 26.1 | 35.7 | 9.7 | 31.0 | 43.0 | 12.1 | 23.8 | 35.0 | 11.3 | 15.2 | 35.2 | 20.0 | 33.9 | 42.5 | 8.6 | | | | | | | | | |
| Access the Internet from Home | 22.9 | 31.6 | 8.6 | 21.6 | 27.9 | 6.3 | 25.6 | 34.4 | 8.8 | 18.5 | 27.4 | 8.9 | 11.5 | 32.9 | 21.3 | 26.9 | 36.0 | 9.2 | | | | | | | | | |
| Frequent User (at least weekly) | 28.5 | 37.6 | 9.1 | 25.6 | 32.3 | 6.7 | 32.0 | 42.2 | 10.2 | 24.3 | 31.2 | 6.9 | 15.4 | 29.7 | 14.3 | 33.0 | 45.1 | 12.2 | | | | | | | | | |
| Use the Internet for e-mail (of main uses) | 23.3 | 40.5 | 17.2 | 22.0 | 34.3 | 12.3 | 26.2 | 44.6 | 18.4 | 19.7 | 35.6 | 15.9 | 14.3 | 37.3 | 23.0 | 25.4 | 48.3 | 22.9 | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | Not Applicable | | |
| Shop/bank on Internet (of main uses) | 2.4 | 13.0 | 10.6 | 2.2 | 11.2 | 9.0 | 2.7 | 13.8 | 11.1 | 1.8 | 10.1 | 8.3 | 1.8 | 5.6 | 3.8 | 2.7 | 18.6 | 15.9 | | | | | | | | | |
| Unlikely to access Internet (next 6 months) | 51.4 | 43.5 | -7.9 | 52.6 | 47.9 | -4.8 | 48.4 | 39.3 | -9.1 | 52.9 | 47.1 | -5.8 | 64.8 | 51.6 | -13.2 | 51.8 | 39.7 | -12.1 | | | | | | | | | |

Australia, States & Territories - Country Areas

| | Australia | | | NSW | | | Victoria | | | Queensland | | | South Australia | | | Western Australia | | | Tasmania | | | Northern Territory | | | ACT | | |
|---|-----------|------|-------|------|------|-------|----------|------|-------|------------|------|-------|-----------------|------|-------|-------------------|------|-------|----------|------|------|--------------------|------|------|------|------|---|
| | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ | 4Q99 | 4Q00 | Δ |
| Have a home Personal Computer | 47.7 | 52.1 | 4.4 | 46.7 | 50.6 | 3.9 | 51.5 | 55.3 | 3.7 | 48.2 | 54.2 | 6.0 | 39.2 | 48.0 | 8.8 | 47.1 | 49.7 | 2.7 | 43.9 | 45.5 | 1.6 | 62.6 | 63.3 | 0.7 | | | |
| Total ever accessed the Internet | 39.1 | 49.3 | 10.2 | 38.2 | 47.3 | 9.1 | 40.4 | 49.0 | 8.6 | 39.8 | 53.5 | 13.6 | 36.2 | 48.5 | 12.2 | 37.2 | 45.6 | 8.4 | 41.0 | 50.9 | 9.9 | 56.0 | 58.2 | 2.2 | | | |
| Have a home Internet Connection | 21.1 | 31.4 | 10.3 | 20.9 | 30.0 | 9.1 | 21.6 | 31.2 | 9.6 | 22.4 | 35.0 | 12.6 | 16.0 | 31.2 | 15.2 | 20.0 | 28.6 | 8.6 | 20.8 | 28.7 | 8.9 | 34.8 | 42.3 | 7.5 | | | |
| Access the Internet from Home | 16.9 | 25.1 | 8.2 | 17.6 | 22.9 | 5.3 | 17.0 | 24.9 | 7.9 | 17.6 | 28.9 | 11.3 | 10.5 | 26.9 | 16.4 | 16.3 | 23.0 | 6.6 | 16.0 | 22.7 | 6.7 | 28.2 | 32.7 | 4.5 | | | |
| Frequent User (at least weekly) | 22.1 | 29.8 | 7.7 | 22.2 | 27.3 | 5.1 | 23.8 | 30.9 | 7.1 | 22.3 | 33.7 | 11.4 | 15.3 | 28.0 | 12.7 | 19.2 | 28.1 | 8.9 | 24.8 | 28.4 | 3.6 | 35.3 | 37.5 | 2.2 | | | |
| Use the Internet for e-mail (of main uses) | 18.4 | 34.3 | 15.9 | 18.2 | 31.2 | 13.0 | 18.7 | 34.0 | 15.3 | 19.4 | 40.3 | 20.9 | 13.3 | 32.8 | 19.5 | 15.6 | 29.6 | 14.0 | 21.8 | 36.0 | 14.2 | 37.8 | 44.8 | 7.0 | | | |
| Shop/bank on Internet (of main uses) | 1.7 | 9.3 | 7.6 | 1.6 | 8.2 | 6.6 | 1.4 | 8.7 | 7.4 | 1.4 | 12.2 | 10.5 | 3.1 | 8.3 | 5.1 | 2.9 | 8.5 | 5.6 | 1.2 | 8.5 | 7.3 | 4.3 | 13.6 | 9.3 | | | |
| Unlikely to access Internet (next 6 months) | 60.6 | 48.5 | -12.1 | 60.3 | 49.7 | -10.5 | 58.8 | 48.1 | -10.7 | 60.8 | 45.7 | -15.1 | 65.1 | 51.3 | -13.8 | 66.7 | 49.5 | -17.1 | 54.2 | 49.8 | -4.4 | 48.5 | 43.4 | -5.1 | | | |

COMMERCIAL IN CONFIDENCE

DSTO**SWOT****Strengths**

- Many available technologies
- Technologies cover broad markets
- Good R&D skills
- Information system competencies

Weaknesses

- Marketing skills
- Lack of private sector good will
- Unknown portfolio management skills
- Undercapitalized commercialization office
- Short-term vision

Opportunities

- Apply R&D into private sector markets
- Royalties from licensing
- Areas of fast market growth available for licensing

Threats

- Change in governmental policies
- Market growth too slow in licensed technologies

Perceptions

- Appear to be doing a lot of things at once rather than focusing on key success areas. Attempting to fund themselves with IP licensing and looking for larger upfront costs to fund their project.
- I told them they needed success stories. If they attempt to hit home runs with VC type deals all the time, they won't create enough success stories. Work with smaller companies and deals not so big to get started on success stories.
- Perceive they have problem with getting VCs down to view technologies.
- Should partner with local MSTC at Adelaide University to conduct Quicklooks and In Depth assessments. Create win-win situation by allowing them to review and then if viable allow them opportunity to commercialize.

Defense Science and Technology Organization

- Moderate Federal funding
- Involved in Radar, guided weapons, communication, IT, sonar, opto-electronics, electronic warfare, command and control, land operations
- Operations and Technology Divisions
- Available interfaces with public for commercialization
 - Technology Support Services – Contracts with individual companies
 - Research agreements
 - Licensing
 - Industry alliances
 - Collaborative R&D
 - Contract R&D
 - Centers of Excellence
 - CRCs

- Publishes white papers on Defense and Industry Policy

Key History Points

- In the mid 90's, continued with licensing of technologies but stopped allowing spin-off companies
- Now trying to set up commercialization company for profit generation within DSTO
- Have tried this before and it didn't work

Issues

- Scientists are researchers, like research and not commercialization
- Cultural barriers – DSTO can't legally provide dollar incentives to scientists for IP that is commercialized
- Patents and IP are not published for others to see. Don't know how transfer covert IP to commercial companies unless they are part of the development.
- Have developed the literature to promote themselves.
- Have directive to commercialize but no funding for positions necessary to carry out the task.

DEFENSE TEAMING CENTER

Interview Team

- Celeste Yeakley, Team Leader
- Kevin Hudson
- Stephen Long
- Eric Sloan
- Burrjed Stafford

The team's main interview session was held on Monday the 9th of July, 2001

Opportunities

Resources:

- Attract and Retain talent by emphasizing 'niche' market (lifestyle and low cost of living)
- Provide overseas opportunities
- Create exciting projects

Government:

- Support by securing market segments exclusively
- Provide a regular flow of work – reduce severe cyclic projects. Provide clear boundaries for projects and eliminate constant 'creep to the right'
- Streamline process to obtain capital

Business Processes:

- Implement better management processes

Two Case Studies

1. AUSTEK
2. Aspect

Case Study

DSTO: is science-based culture. Commercialization is doable, but the problem is the value that the commonwealth puts on the IP (typically is over valued). Value is not realized unless it is gotten out to market. The IP value is unrealistic so it makes it difficult to get to market.

- There has been a great deal of attrition from DSTO to go out and independently commercialize. DSTO loses, but it adds to the dynamics of the state.
- There was a commercial version of DSTO in Adelaide (CSI) and a spin off company AUSTEK was on the cutting edge of technology. The company rose quickly and died quickly. Grew at a rate that outstripped the ability to manage itself and couldn't get access to world markets to continue to sustain itself – market was saturated very quickly.
- Getting things to a world market, Adelaide is not seen as being a leader in technology. No one is going to take us seriously until we have a strong base in North America or Europe.

Sources of help:

- There was another program called START, they would pay matching dollars to get a new project on the market. You had to get to market in 10 years. High technology start-up grant.
- Ausindustry.gov.au – a website that summarizes all the government programs. Get invented during election time – very hard to get the money because the projects tend to be very narrowly defined. Typically you have to have a lot of paperwork (business case, business plan, marketing plan, etc.). They require massive amounts of paperwork and it is very difficult.

- To get access to the EU, you have to have a plant there.
- One company bought entry into the market by buying a US company.

Case Study

Example: Aspect computing: developed a software product that was built primarily for IBM mainframes and was built to be used with IS400 computers, so a large part of their business was global (because it wasn't used in Australia), last year they formed the offshoot company called Lancer. A number of cases have been where Australian companies have built great software, but it is very quick to saturate the market in Australia. Need to sell a lot of software to remain solvent. Biggest market in the world is the US. If the Australian company builds a company in US, the product tends to get dictated by the US company. The effect of globalization is that the control tends to leave Australia and go to the US. If you have something in place to maintain the control, it makes it easier to keep control in Aus.

Middle eastern companies are now starting to require a unique solution that serves them.

IP: As an importer of goods, IP is an ongoing problem, particularly with source code. Local adaptation because our threat is unique to the world. The government will want the ability to modify and maintain the system. Legal framework is in place.

- One of the problems is that the legal structure is long and expensive to test it out. They tend to give out source code – they are not allowed to sell it or license it to anyone else.
- Government doesn't want to own IP, just have rights to it.
- They want to support and maintain it for the next 30 years. In order to compete support, they want the right to unsupply your IP to a 3rd party and most companies say 'no'
- Australian government is fairly timid on pursuing IP issues – even when it is done, it is done far too late.
- It is politically sensitive in that there are bigger issues to worry about – like free trade, so there is not an emphasis on IP in new technology areas.
- US companies have to get approval to export their IP from Australia.
- Aus has to get export approval just like US, but they are a smaller nation and it is a lot easier – you can almost walk it through the department.
- Project: concept was developed by the group here, went back through US to ensure that this was allowed to be exported, part of the process was to determine it was OK for Aus to sell it, but the US did not want to be seen selling it.
- Defense and aerospace industries tend to not really push to get IP

Facilitators

- Their member organizations work cooperatively to gain business – they form 'clusters'
- Work closely with industry and trade
- Provide background scenarios so that members can network – enabling members to win business that they might not have on their own
- It is less expensive to do business in Adelaide (as opposed to Sydney/Melbourne)
- Engineers are world class and get a broad base of experience

- They are working with the local universities to influence their curricula and they also obtain student workers
- They have had some very successful joint projects
- An export grant system is available along with a web site that describes all the available programs.
- Concept Technology Demonstrator (CTD) helps get funding for new projects.
- START program/matching dollars for promising programs

Barriers/Obstacles

- It is a challenge for the small company to win a prime contract
- Their market is limited to one customer – the government
- Resources:
 - Very difficult to attract and retain talent – especially electronic, software and system engineers
 - Not enough graduates are available
 - There needs to be experienced as well as ‘fresh’ talent (a balance)
 - Other companies like to compete for engineers – both in Adelaide and abroad
 - The culture of the youth is that they want to leave Adelaide
 - Engineers work “on projects” NOT “for companies” – cannot hold them even for matching offers of compensation
 - Workers get bored due to the length of projects in defense – they are not seeing results or feeling a part of them.
 - Engineers ‘grow up’ to be managers – causing them to lose more engineering talent.
- Adelaide is not the ‘center of commerce’
- They have MASSIVE peaks and troughs in their industry – projects are not steady, making it hard to keep teams together. A balance is needed.
- They are influenced by what the US wants to do
- It is difficult to market in the US because of protectionism – US tends to take up to 90% of the proceeds
- Australian Industry Involvement (AII) is mandated
- Management processes need to be improved
- Project teams tend to lose sight of the business case for a project
- Companies (or possible new companies) have to find their own ways of commercializing a product.
- IP
 - The value that the government puts on IP is unrealistic
 - Legal structure is long and expensive
 - Not allowed to sell to third parties
 - Government does not want to own it, just have rights
 - Most companies say ‘no’ to third party rights
 - Government is timid on pursuing IP rights
- The market gets saturated very quickly
- Adelaide is not seen as a technology leader in the global market – no one takes them seriously until they are in North America or Europe
- Incubator programs/grants are difficult to obtain due to the massive amounts of paperwork required
- They must compete with their own country for their market – govt should ‘lock in’ a center of excellence in a particular area to ease this internal competition

Issues/Possible solutions

- Offer overseas assignments to engineers so that they can temporarily leave Adelaide. This would address the 'we must leave here' culture
- More varieties of high tech jobs would help to keep workers in Adelaide
- Best opportunities/possible markets are middle east and southeast Asia
- Many issues could be addressed through better management
- Companies need to find some projects that are not defense related/do more commercial exports
- Attrition from DSTO causes DSTO to 'lose' but the state to 'win' – probably a net gain for SA
- It is uncertain whether the scorecard process recently introduced would help business

Interview Notes:

Overview

Eric Olsen does the land management around the technology part – manages it like a mini-technopolis (see handout). Many companies are important to Defense Systems. Thompson Marconi, CSC Australia. Interact very closely with DSTO. Also a home for the defense teaming center. Emphasizing that they are also a 50% partner with Mawson. Work very closely with industry and trade (investment and attraction).

John Fargher: (Interim CEO) 50 member companies, 30 of them are small manufacturing. Strong leaning towards computer systems and IT although there are some HW people who manufacture small defense sector applications and computer systems. The other half of the business are people who are looking for joint projects. Their organization helps to find projects by helping smaller members to combine resources so that they can bid for contracts. TENIX, CEA, SAAB. The most important role is the ability to put together members to form teams. Soft networking = contacts, assistance with leads, setting up conferences, taking members to air shows, etc. Provide background scenario so that members can network.

- The mission of this organization is to help them to find work and to assemble members together to pitch a project and work with a prime contractor. Individually they are all separate companies. Aggregating resources together to work for primes.
- By being a member, companies will be enabled to win business that they might not have on their own.
- Technology-focused groups in DTC might see prime contractors that might need their area of expertise.
- The challenge is for the small company to get in with a prime contractor and to be seen as bringing value to the primes.
- Difficulty in Australia is that you have only one customer (the Australian DoD). You have to know the people within the DoD. You need to 'get in the mind of the customer.' The lower down you are (subcontractor), the earlier you have to make a decision. The cost of tendering is massive.
- Clusters: Defense, Aerospace and IT, looking to make a third cluster in health and environment.

Kevin Kitto (Business Development Manager): 100% owned by UK. 2700 people total. Operations in Adelaide go back to 1948, they are now reinvesting in Adelaide. They are scaling back in Melbourne and Sydney because it is cheaper to do business here in Adelaide. DSTO is also here and also are in proximity to customers.

- Big negative: people move to Adelaide as a lifestyle decision which creates a problem in recruiting particularly in software and systems engineering staff.
- This is not the center of commerce. The defense market is small and unprotected in Australia – have to battle the world for business.
- Not enough graduates support their operations – they could employ 50 people tomorrow if they had candidates. Engineering, electronics and computer science. Aeronautical engineers are very difficult also. There needs to be a balance of mature and fresh out engineers.
- Can they use immigrants – additional costs, but they also have other large operations in US and Europe that need the same resources. They (competitors) like Oz engineers and want to recruit them from here because they have a broad based background. Asian students that are working here can now apply to work here (this is a change from the past).
- They are working to influence the universities to produce more engineers. DoD is unable to undertake all the R&D they would like to, so they can use the Uni's to do research and influence the curriculum. They are a single customer company in this county and are held hostage to this.
- There is a culture among the youth that they want to leave here after studying. One solution might be to offer overseas appointments for a few years. An important factor is the availability of SW and systems engineers is that they feel very secure in their job – they work on projects they want, not for “companies.”
- Larger projects are long and protracted and the engineers get bored because they can't see results of their efforts. They have lost a lot of engineers to the communications sector. Cannot even hold them even by matching competing offers. Motorola has 450 engineers across the road.
- More varieties of high tech jobs would help keep engineers here. The way to do that would be to bring big contracts here. - The submarine contract is an example. A complete facility was built out of a swamp – but this was never a company, but merely a project, so what do you do with the workforce?
- Have MASSIVE peaks and troughs in industry.
- They are very influenced by what the US wants to do. Example is Taiwan – would have bought submarines, so they couldn't sell them to them because of US/China. Not a technology issue, but an alliance issue.
- Ball Aerospace is a joint project. Also Raytheon/Lockheed Martin for the P3 Orion project. There is a lot of original software for that project. 20 people on project.
- It is difficult to market back into the US market because there is a lot of protectionism. They can put an item in to be evaluated, even if it is considered to be good, the US partner tends to take the largest portion of the project (lose 90% of it).
- Best opportunities are middle east and southeast Asia.
- Australian Industry Involvement (AII) is mandated for defence work.
- Engineers grow up to be managers – they aren't engineers anymore.
- Engineering skill levels are second to none in the world, but management has a long way to go. (and contract management). Operations Mission Simulator – the challenge is to manage the program – applies to defence but is industry wide. Industry that has the best handle on management is the Civil and construction industry – could be addressed through management.
- Lose sight of the fact that this is a business and we are in it to make money. 99% of all engineering projects, delivered projects are excellent, but schedule is often incorrect.

- It is difficult to keep teams together – no one can carry a team waiting for the customer to make a decision. They try to put a short leash on them, but they have to be careful of the employees overall career expectations. Have to let them go or put them on another project they will be more interested in.
- They need to balance projects in terms of resources. They can 'park' people elsewhere, but getting them back can be difficult (Noel – ASPECT Computing, largest IT company in Australia).

Chris Baker (Business Development Manager – SYDAC). Simulation engineers from DSTO. 90% of their business is in the commercial arena. Dynamic simulations – training simulations including visualization and audio. Also do decision support systems – key area is gas industry – integrates manual and real time data with enterprise management. Key customer is SANTOS – one system is used to manage fields.

- Defence solutions cannot be off the shelf solutions, so they are developed in a spiral.
- There is a 'stop/go' nature of development.
- Resilience in companies comes from not being too dependent on defense. How do the companies get involved in more commercial exports?
- Companies: need to find their own ways of commercializing their products.
- An export grant system is available – up to 200k of your expenses in exporting (up to 50%) –Chris – this is done on a rebate system.

Concept Technology Demonstrator: part of a wider group of organization to get funding for new projects. They structure this according to what industry is being supported. They ask what the market opportunity is and the job creation.

Tried applying engineering skills and management skills in defense projects to commercial world and that is a formula for failure. They would price themselves out of the market because their process was too expensive. Operational maintenance support.

How does the new tax law on outsourcing affect you?

- This won't affect this group much. Company tax rate has been brought back to 30%. The tax rate is 50% for employees. They are trying to prevent workers from trying to work around the tax system by being contractors.

35 members interviewed and everyone has been trying to get away from 100% specialization in defense projects. They want the teaming together to work for a prime might be unnecessary – they want to get their own smaller projects that they might just work by themselves. There has been a shift away from project people and outsourcing the entire project itself, so this makes it difficult for smaller companies to get contracts.

Is there some call from their industries to team together for commercialization (no on a defense focus). This is the big question that is being asked today but they have tended to stay with defense because the members see this as a focus for them and gives them the ability to do more business for defense. They have other ways to get contracts outside of defense. There is no obligation for members to team through the center. Membership is relatively easy. They offer associates membership also – like recruiters, lawyers, etc.

Defense is starting to implement scorecards – this is written around the US and UK model. They are not confident that this will help their organizations. They view it as a

way to give the government more dimensions to slow business with. This is directed only at the 'big guns' right now. It is just being started. It is supposed to be designed to get better use of Aus businesses but ...

DoD is one of the largest spenders of money. 2.5 to 3B is used for capital acquisition, so defense outlays is relatively high, second only to US.

Changes in business situations can greatly affect the defense industry. All the major players are here – it is a small market with a lot of players. What they lag in is software and systems integration. Their current level of capabilities is unsustainable. Government owns all of one of the three major players and while they say the industry will sort things out, that is not realistic because in reality the government owns the industry.

Aerospace and ship building (Noel) – we do not commit ourselves as a nation for a particular period of time. We have built aircraft to a point where they start to be successful, the government pulls support so that the capability we have developed just disappeared. The US govt is more interventionist in these matters. The Aus government needs to be more interventionist. Don't lead us down the path wasting our resources on this small market and then pull support. They have to compete within their own country for the market. They fragmented one project to 14 different areas.

Two things that could help companies grow, what would they be?

1. Access to capital – taking a long time, because they want to stay as an Adelaide based company
2. Resources: talent, good quality people.
3. Government contracting and the ease of doing business with government/government policy – would be nice to have some
4. Regular flow of work – uniform flow, not stop/go, stop/go –they rotate through jobs too often (2yrs) – no continuity because of long project times. Projects constantly move to the right. This kills smaller companies very quickly.

State governments are very competitive in Australia.

Infrastructure OK.

Why would anyone bother investing in south Australia for a business opportunity? It does come down to lifestyle a lot. So many other things are equal. Cost of living is lower here.

EDUCATION

Interview Team

- Robert Meyer, Team Leader
- Amy Blakely
- Adrienne Hughto
- David Schieck
- Jane Schueler

Who we met with

The team's main interview session was held on Monday the 9th July with various representatives from the Department of Education Training and Employment (DETE) and the Vocational Education Training sector. During the week though, numerous informal discussions were conducted with various individuals, including representatives from Adelaide University, concerning this topic and its vital importance to fostering change.

Because of the focus of this research study on technology growth and entrepreneurship, this summary evaluation of Education is centered on the areas of technology and enterprise, as they are vital to the South Australian (SA) economy.

Opportunities

- Because of funding subsidies, it is sometimes easier to get students from outlying areas involved in programs at the Technology School of the Future than those from nearby schools. DETE and the affected schools should try and find ways to increase participation by these inner city schools. This will have substantial payoffs for the community, students and schools involved.
- South Australia (SA) recently shortened the school year by one week to allow additional teacher training. While this is one example of the Administration's commitment to teacher training, with the advancement of technology initiatives to include computer literacy for teachers as well as a new curriculum for all years, it is important that the Administration maintain continuous training programs and implement high outcome measures for teachers to deliver a quality education to the student.
- With the new curriculum to be student/parent focused, it is important that those professionals assisting students in choosing their career path are well educated in goal setting, parent counseling and career opportunities through vocational programs as well as educational opportunities within each university.
- While efforts should continue to expose SA teachers to learning and training opportunities outside the State as well as internationally, focus should also be directed at spreading the word to teachers in all SA schools about some of the world class technology oriented teachers and programs within the State.
- DETE is implementing a new curriculum to be in effect at the end of this year (South Australian Curriculum, Standards and Accountability (SACSA) Framework). It is important that educators in the university setting be versed in this initiative and ideally teaches the educational theory used in SA. Doing so would provide a bridge for older teachers and new teachers entering into the profession.
- To encourage the development of new entrepreneurial approaches and programs every effort should be made to adapt flexible approaches to administrative procedures and human resource policies.

Case Studies

Enterprise Education Program (Mypolonga Primary School example)

“Enterprise Education is directed toward achieving a learning culture which will result in greater numbers of students to be enthused and equipped to identify, create, initiate and successfully manage personal, business, work and community opportunities.”⁴ Students (with varying degrees of assistance from their teachers) learn to:

- Recognize an opportunity and develop a concept.
- Produce a product or service, or develop a process.
- Test/evaluate the “product” or service.
- Refine the product in response to evaluation.
- Market or promote the product.
- Extend the learning to a new concept or opportunity.

The Enterprise Education program began in SA in 1996 at Salisbury High School, which was declared the first Enterprise school in Australia. The following year a sister Enterprise school was established in the opposite side of Adelaide at Morphett Vale. Then in the next 2 years about 20 schools were designated to be Enterprise schools and a cluster arrangement was established.

There were very positive outcomes from these schools, particularly in the higher levels of employment that students experienced, including self-employment. This success excited a national interest in this innovation so that the Federal Government and eventually all other States followed this model.

Starting in the year 2000, a process was begun to implement Enterprise Education across all schools in SA. All students now have access to this approach in all their subjects and at all year levels. There is still a long way to go but it is now mandated. It only requires some settling in time and extra resources for teacher development for an impact to be visible. Crucial to the successful implementation of Enterprise Education is a strong partnership between business and schools.

An excellent example of how this program works involves the Mypolonga Primary School Shop. The school is located approximately 100 kms northeast of Adelaide near Murray Bridge. Dairy farming and orange and apricot fruit growing are the major industries in the region. By the innovative use of technology the school has overcome constraints of size, relative isolation and limited income. There are less than 100 students.

The goal of the program was to set up and run a shop selling crafts and local produce. The Shop operates from the disused post office across the road from the school. The Shop was first developed from a student’s idea at a class meeting in 1994. Students embraced the idea and started making a range of craft items to sell. Community members shared their skills and generated a great deal of enthusiasm. A local tour operator offered to stop at The Shop as part of their itinerary. This dramatically increased sales.

The Shop is now open for business every Friday. Students invited local craftspeople to place their goods for sale on consignment. The students are also creating a cottage garden. Each Monday morning the whole class does mathematical calculations from the

⁴ All purpose statement, DETYA Enterprise Education Reference Group, 1997

previous Friday trading. A student run School Shop Committee decides how the profits are spent.

The Mypolonga Primary School Shop has evolved into a venture that very positively impacts on the curriculum and the whole culture of the school. It has been a catalyst for the development of genuine school-community partnerships. The Shop has links to all aspects of the school's curriculum. Examples include:

- English – writing reports, brochures, video scripts, letters, oral communication
- Mathematics – commission calculations, sales calculations, pricing, measurement
- Technology – spreadsheets, computing, displays, video production, badge and magnet making

Facilitators

National and State Policy

- In SA, public education is viewed as being a change agent in regards to information technology.
- In regard to information technology for the school system, the internal structure of development has three major areas of emphasis:
 - Expect
 - An Annual Report that compares goals and achievements
 - Influence
 - Various mentoring programs
 - Inspire
 - Bring others onto the “train”
 - Technology School of the Future
- There is a national charge for all of the Australian states to focus on implementing specific information technology standards centered on online education, people, and infrastructure.
- A major new curriculum initiative is about to be introduced into the South Australia school system (SACSA). This curriculum is intended to be customer oriented, both individual and community based. In theory this new curriculum is an integrated learning continuum from kindergarten through year 12 with learning assessment along the way.

Business Oriented Processes and Entrepreneurial Approaches

- Various Entrepreneurial programs are being developed at Adelaide University and University of South Australia. For example, Adelaide University initiated a Masters of Science and Technology Commercialization degree program in 1999.
- A variety of current initiatives to improve ICT competencies and information economy literacy for both students and faculty for K-12 schools.
 - Industry competency standards are being directly used to build student skill set requirements. Beginning in 2001 an implementation of strategies focusing on benchmarking ICT competencies using a three-phase approach was introduced. This addresses competencies from early childhood to senior secondary. Extensive industry consultation was used to develop this strategy. For example, by the end of year 10 all students will achieve an industry accredited ICT qualification via Information Industry Training Advisory Body (IITAB) National Training Package IT Certificate I.
 - Examples of initiatives for teacher competency include the discovery program. The Learning Technologies Project offers a program of leading

edge professional development known as Master classes. Esteemed national and international speakers form the basis of this program. Another component is a series of overseas study tours (Department of Education Training and Employment) conducted to review personal and corporate visions and benchmark and broaden the base of leading edge knowledge about technology across the Department.

- The IT Cadets initiative is a partnership between community, industry groups, and schools. It expands the depth and range of student opportunities to use their IT skills in a volunteering ethos. IT skilled South Australian students will be encouraged to become volunteers to help community groups individuals and small businesses to go online. These activities will be undertaken in partnership with the local IT industry when appropriate.
- There is a concerted effort to develop the quality of Internet use of South Australian students in terms of learning opportunities and technology utilization. For example, 3000 students in SA are participating in the internationally recognized Jason project. Every year the Jason project assembles students and teachers. Also, connecting the continent is an online event within the Federation that celebrates a day in the life of the communities on the overland telegraph line.
- The Technology School of the Future (TSOF) is the major center for teacher development in learning technologies and is a unique facility when compared internationally. A number of leading companies are involved in joint trials and testing of equipment and applications at TSOF. These include Novell, Microsoft, Cisco, Sun Microsystems, Apple Computer, and EDS. Local companies include Intellecta, Interact, Labtronics, Tru Life Creations and Electronic Concepts. TSOF provides an ideal test bed for potential school curriculum and administrative systems. Technical staff work with industry representatives to develop applications suitable for the school environment.
- SA enjoys the reputation as the nation's innovative, and progressive leader in the delivery of Vocational Education and Training. For example the Virtual Learning Environment (VLE) will use Internet technology to enable community members to access quality education from anywhere in the world and at any time.
- Innovative efforts like the TAFE International College of Hotel Management help support SA's efforts to develop an international reputation for business oriented education opportunities.

Physical Infrastructure and Resources

- Three major Universities in South Australia.
- DETE has negotiated to provide a full suite of Microsoft programs for all school computers and teacher's home computers.
- In terms of the Internet connectivity, all schools have at least 28K of bandwidth and many enjoy 56K. DETE's goal is to increase bandwidth to 2 Mbytes/s to all schools by 2002.
- Web enabled tools provide schools with direct access to administrative information related specifically to their school and the control of this function (e.g. software licensing). This has saved approximately 60% of previously centralized technical support time.

Barriers/Obstacles

- It is anticipated that substantial time and resources will need to be applied to successfully implement the State's new approach to K-12 curriculum.

- It is our understanding that SA has the oldest age demographic in Australia. This relatively older age distribution within SA will require effective strategies in the areas of continuing education in regard to retooling for new jobs and pathways to reenter academia for adult students.
- This age demographic also creates a significant aging teacher population requiring critical programs for teacher in-training skills.
- As with many areas of the world, SA faces issues associated with the disparity of computer technology availability between population groups.
- Because of current funding trends, DETE needs to focus on developing a commercially driven approach.
- DETE needs to find ways to overcome the tendency for innovative teachers to burnout due to increased expectation of job performance above their existing duties.
- The new types of programs being developed by DETE are generating increasingly more intellectual property issues that need to be addressed
- There is no clear integration of entrepreneurial orientated programs in the engineering or science curriculums at the South Australian universities.
- Sometimes as the various educational organizations in the State strive to establish entrepreneurial approaches and programs they come in conflict with rigidity of the system, like old job titles and pay scales vs. new functions and job requirements.

Quotes

Notable quotes included:

- “ The degree and speed of Internet connectivity for our schools is only as important as the quality of use.”
- “Our core business is learning.”

ENTREPRENEURIAL INFRASTRUCTURE- SMART CITY

Wednesday, July 13, 2001

Submitted by Pete Polonsky

Interview Team

-Pete Polonsky
-Dave Gibson
-Nick Daley
-Catherine Polito
-Robert Meyer

Local people

Chris Hannaford (ACC)
Mark McAllister (ACC)
Carlo Volpato (ACC)
Mike Smiljanic (ACC)

Strengths

- Strong engagement from city government leaders.
- Very good pro-active initiatives:
 - Adelaidebiz.com.au received very strong acceptance rates by businesses.
 - Early addressing of bandwidth requirements with the Smart Building project.
 - Gartner e-government strategy to provide presence, interaction, transaction, and transformation of government with people.
 - Private enterprises do appreciate the infrastructure activities. They feel they are valuable whereas they do not feel 'consulting and advice' from government officials is valuable.

Obstacles

- Will the lack of a revenue model be sustainable for the Adelaidebiz.com.au? If not, will merchants continue to participate after receiving it for free?
- Lack of industry experts running projects. Government personnel are dedicated and hardworking, but expertise cannot be replaced.
- Lack of understanding of what private enterprises actually want, need, and will place value on. It is not understood what businesses actually want? It appears that some initiatives are conceived and implemented without the input of the actual customers.
- Do e-government initiatives enhance or benefit anyone? Or do they just cost the government and provide another alternative that few are using? There must be measurable outcomes. What is the ROI?

Recommendations

- The City of Adelaide should consult with the IT Council (which represents the private sector) to take advice as to what they feel they need and want the government to provide. The council should be run entirely by the private sector with reports made to the government. Then, when specific initiatives are requested, instead of the government undertaking all of them with their funding, look to outside, professional contractors to actually provide the services. Outside contractors will be more accountable than a government agency because their livelihood depends on providing the services at the right costs.

COMMERCIAL IN CONFIDENCE

- Conduct research to see how SA stacks up against other Australian cities in other states with regards to infrastructure initiatives. Understand what your strengths are. Then communicate these strengths as part of the Stage 2 External PR campaign to show why businesses want to be in SA.
- For Adelaidebiz.com.au, consider introducing add-on fee-based features such as email and advertising. Continue to use an outside contractor to handle the implementation of such features. Keep your staff down. Pay for services using outside contractors when you need them.
- Utilize the South Australian knowledge-based and experience in Exporting to set up an export center to service businesses. (South Australia exports to 50% more countries than the rest of Australia.) Existing businesses can use to learn how to export. Can be used as a tool to recruit other new businesses. Helps businesses quickly get through the red tape necessary to export.

THE SOUTH AUSTRALIAN FOOD INDUSTRY

The South Australian food industry is the State's biggest export earner. The industry spans all the regions of Southern Australia and comprises greater than 15,000 farmers and fishers, 400 processors and employs thousands throughout the market chain.

The South Australian food industry is focused on the growing and competitive global market and is in the midst of its plans to grow from 2 billion a year (1999 figures) to 15 billion per year by 2010. The global food market generates greater than \$US2700 billion/yr., and Asia, alone, is greater than 16 billion/yr. See <http://www.food.sa.gov.au>

Strengths

- Clean and green reputation
- Australia seen as a safe haven for meat (all plants EU and USDA compliant)
- Beginning cluster projects to network group of growers for export demands
- Money not an issue – money available if there is a market
- Seen as a “Food Gourmet” state – new flavor with sustained quality
- Growing education program for Food Industry
- Food Adelaide brings together groups of companies for their own representation in the market
- Food for the Future Council – an industry/government partnership at the highest level – a team of visionary and successful industry leaders who have developed initiatives and strategies in: export facilitation, quality food, innovation and technology, strategic investment and industry culture and promotion.

Weaknesses

- Lack of market focus
- “Push” to market instead of “Pull”
- Import duties on lamb by US
- Large companies denied access to support
- Transportation of goods to market
- Shortage of shipping food containers
- Airline availability and curfew times of flights limit market advantage

Opportunities

- Development of “take back” project associated with “clean and green”. This refers to packaging and recycling issues at the end of a product's cycle.
- Aging population could provide opportunity for the younger generation via needs and services.
- Education in Food Industry still in infancy.
- Creating the critical mass and support for the food industry similar to the wine industry received.
- Provide exciting projects to attract people to the business

Threats

- International pressures to perform.

With the many strengths of the food industry, the weaker areas can be overcome via collaboration of the private sector, the governmental sector and the integration of both with the following:

- Department of Industry and Trade – Business Investment: the government has a commitment to ensuring that the State's business environment is both predictable and constantly improved to reflect the changing needs of business.
- Department of Human Services – Food Section: administers legislation designed to protect the safety of food in S.A. and developing need food in conjunction with the Commonwealths and other State Governments.
- South Australia Centre for Manufacturing (SACFM): offers specialized services which meet the needs identified by S.A. industry itself as being vital to future competitiveness.
- Primary Industries and Resources of South Australia (PIRSA): offers services to the food industry i.e. technical advice, training, business management and market research.
- The Business Centre: first stop for the food processing industry; provides a comprehensive range of services that focus on assisting businesses to become more competitive and profitable including advice, support from client managers and business advisors, access to Government programs, and skills development.
- South Australian Research & Development Institute (SARDI): conducts innovation and practical research in the areas of agribusiness, commercial enterprise, manufacturing/processing industries, primary industries agriculture, aquaculture, and fishing.
- Department of Education, Training and Employment: provides vocational education and training through its TAFE Institutes, and through over 500 registered non-government providers.
- Transport South Australia: support for the efficient freight movement of food exports.

GAMES AND ANIMATION

Interview Team

- Eddie Trevino, Team Leader
- Burrjed Stafford
- CelesteYeakley

Interview date: July 12, 2001

Interviewees: Greg Siegele (CEO Ratbags), Rob Farnan (TAFE), Wayne Lewis (Rising Sun), Chris Hannaford (ACC)

Interview Notes:

Overview –

See the <http://www.loudscreen.org/> web site. This is a small industry in SA.

Ratbag: (Greg) - CEO and cofounder. Video gamers – American racing games: Dirt Track Racing – most sales come from the states – moved across to Playstation 2 with racing games. 60 staff – 7 in Sydney, also own motion capture studio where they capture movement. Make video games and have an action game along with a racing game coming out in December. Full time film director (with 20 yrs experience) full time screenwriter, and script editor (worked on the Matrix) storyboard artists, voice actors, for pushing the boundaries of game development.

- Formed the company 8 years ago – took that long to get a contract
- Never had any debt finance or venture capital
- 4 yrs to American contract with \$3M
- They have employed xbox programmers. Have doubts about content – not compatible with the console market. They are a pc development company
- Unemployment helped with getting started – wouldn't let them do that now. "National employment incentive scheme" was before. He was a lawyer. Business partner was a programmer
- Startup marketing was to go to a trade show. Couldn't sell game concept on paper kept plugging away and developed a prototype that was the best 3D game 'one the floor' at the E3 conference. Technology and the art were very impressive
- IP protection – have not bothered. Have copyright – no patent protection because the industry is so dynamic.
- Initial stages, the business council paid for half of fees to go to trade show. They also helped with funding to staff and get equipment.
- Resources: hard to find experienced game developers. They bring in 20% of their developers from overseas (England and the states). Takes about 6 months to become useful.
- Programmers have computer science degrees. Two guys with PhDs in fluid dynamics
- Illustrators, industrial designers, graphic designers. Now that they are getting into storyboards.
- Metal gear solid is a competitor product.
- Some employees tried to spin out and try to start their own business, but their business practices didn't help them to survive.
- Great retention – no one has left in the last 2 years. People are very excited about what they are working on.
- 18 months ago it was 15 employees. Put on 3 or 4 people a month. 63 Pirie St.

COMMERCIAL IN CONFIDENCE

- Voice actors are imported from Hollywood because the industry isn't mature here.
- Team oriented business – no set working hours. Need to work to schedule.
- Traditional project management used.
- Their release target is Christmastime. Print CDs from august to September. Usually release game in November because of schedule slips. Over 90% of games shipped very late. All their titles ship on time.
- Grown from 1 team company to a 2.5 team company. Producers = project management.
- Biggest challenge: dealing with growth and getting management systems worked out. Should be sorted out in 6-12 months. Challenges aren't that great, what they have are opportunities. Limit to growth is management and availability of people. They might take more risk on publishing more games and marketing. New markets emerging are wireless games – they have assigned a new CTO.
- They need to employ another 5 –10 people in the next year. Very talented developers around. They might acquire some software companies – so they can employ good project management or develop a joint venture.
- Globally: question in the states whether advancing games will be accepted (Quake for example) because their games tend to be 'shoot-em-up' like Quake
- Threat for them is that the introduction of new consoles has wiped out sales. Before they had a combined based of 130M units, and not it is 50M units. It happens every 5yrs.- but since they are a preferred company, they are already ahead of the curve and will be 2 yrs. Ahead of the rest of the companies.
- Staying in games? They don't worry about the business cycle. He believes that in 20-30 yrs time it will be the predominant industry. Movies will move into games not the other way around. He gets a lot of exposure into many creative areas. Employees are happy and excited about their jobs. Every year the bar is raised – new games are 50% better than last year. Plenty of growth opportunities. Are moving to wireless games.
- All the character animators are in Sydney. There is another studio on the gold coast.
- Is there anything the SA film industry can do to train? No – would do it through an educational industry.
- Now that they are in Adelaide they intend to stay. Would not move the company. They might need to have an office in US if they get into publishing, but otherwise no. They have an agent in the US. Sprintcar organization in US licensed to Ratbag (tracks, team sponsors). When they developed dirt track games and the dirt track people came to them
- Advice to new startups. They must get a prototype – spend a year developing that – sweat equity – great prototype might get you a good deal. Start up might be able to find a private (angel) or put in sweat equity. Need to go overseas and meet people face to face.
- 70% of the people in the office work 10 till 6. Publishers do test now; they are just setting up test organization now.
- Other game developers in Adelaide: R3 – specialize in making redemption games – there are a couple of other very small start-ups. There are about 40 in Australia – half are strong like Ratbag. One company in Adelaide picked up a group of Ukrainians and brought them here as a team.
- A few animation companies like Guava, etc. that are very strong.
- They might be interested in strategic alliances, but they have not done a lot in the past.

- Infogram is a games publisher from France (France didn't have a dot.com revolution). They bought Australia's largest game developer – Beam software in Melbourne. They have not developed their own IP so they have not gotten into as good a position as Ratbag.
- AME was a venture capital fund that was set up in 1984 (set up with 45M) – supported game development and now there are VCs in Australia so the landscape is different – no AME, would have to go VC now.

Animation (Rob Farnan) –

- Animators are doing real well doing real time information into simulations. Still doing arcade and redemption games but also doing simulation.
- Rob: does private work, runs a course in animation in a secondary campus. Not a single tertiary public animation course in Adelaide. Need to have a public course.
- Canberra has an academy of animating/ quantum has a private course in games. There is no cohesive set of coursework as far as animation goes. Main emphasis has been on interactive media.
- Loudscreen is a volunteer organization 120-150 people in the database. Have run meetings for 6 or 7 years and are a voluntary job placement organization. Also do some industry development work, which is voluntary and spasmodic depending on response they get from the industry.
- They are trying to bring in a wide group including the film industry.
- Rob's things 'seem to fit between the cracks'
- There are 2 groups of animation: Anafix- stop motion animation, cell animation and does quite a bit of offshore work. (Offshoots in Cojo (production house), Guava (3D animation), Oasis (post Hollywood film work- Shine, snow falling on cedars – Rising Sun (digital post production – lots of post animation work, do Hollywood films Red Planet and other Asian work) groups are run by two brothers.
- Tawson is a very strong company – there have closed their Adelaide office. 3D representation of a figure that is used for injury analysis and education. Had 10 people in Seattle in their sales office that was selling to Nike, Dream Works, and NBC. They have trouble with funding because they didn't have enough revenue to sustain themselves. Typical dot-com problems where business model was to go for more rounds of venture capital, so when the VCs dried up....
- Ratbag uses CodeWarrior for development.

Wayne from Rising Sun Pictures:

- Knows Greg. Met in 1984 worked with robot animation for camera movement.
- More diverse than Ratbag. Rising sun started out in services and moved to products
- Just finished a 50M contract with WB
- Working on media solutions. Provide solutions; print, new media (games, interactive internet) and video work. Also SW solutions such as monitor calibration. Make people be able to see film output and look at identical monitor outputs. Big issue when working in visual applications.
- 3 partners in company.
- They cash flowed fee for service to enable them to go into products
- One income stream is not sustainable in Adelaide
- They generalized and became experts in a lot of areas so that they can be seen as consultants – decided to be 'specialists in general areas'

- The fun is in being a generalist. “To get good people, you need interesting work” they are getting access to high profile jobs like work for WB.
- Now the fee for service is a way to get cash for retirement funds
- They have turned their weaknesses into a strength – the remoteness has provided a strength for the company. They are dedicated to staying here in Adelaide.
- They are trying to lobby the government is remote technologies. They need infrastructure so that they have high-speed access. SOHO in London is a concept for Heinligh street...want to have ‘character’ in setting up here
- They are growing slowly. Spent seven years earning revenue – have not borrowed money
- Need a community of companies here in order to synergism. Heavy lobbying to the government for supporting infrastructure to give people the ability to work remotely out of this town. Need to put conduit down in order to give the ability to run the networks. Make sure that every new project includes networking abilities
- Great lifestyle area – very convenient to live here. Opportunities are limited here currently. Need to develop exciting projects.
- Most of their company is 25 or younger – if they weren’t here they would have to go to another city.
- Lots of people here have talents that can be used. Less competition for talent here.
- Next strategy is to take out large advertisements in the right type of people.
- Small employment pool is a problem
- Town needs better education to this industry, but until there is somewhere for them to go, they will keep leaving. Their challenge is trying to get people back here “Center of Excellence program might help to define curricula – need to look at subsets of multimedia applications.
- People with families like it here. “Family life here is second to none”
- Projects can tend to be huge “save the world” projects.
- Their problem is how to get people to not kill themselves at work. They are moving to creating products as a way to relieve their workers from such a heavy workload and decrease their working hours.
- A town like this needs to deal with venture capital. They have chosen to take 6 yrs of growth – but it was important to them to grow organically.
- People are still open to venture capital, but a few people were burned lately, - they didn’t investigate their product enough and in the long run, they product wasn’t viable. The presumption that people providing VC investigated the product.
- Spin offs: if possible they like to take ownership of part of their product. They are trying to set up projects that might allow them to own part of the project. No spin offs yet – they encourage entrepreneurial spirit in their company. They only have 20 people in the company – hope to grow to 45 people. People who have set up a business have not worried about infrastructure to start – this could be a problem for launching. Adelaide needs to encourage the growth of the companies that are here. Offering tax incentives for other companies coming here encourages a mercenary attitude. Otherwise the temptation is that the new company will leave. Critical mass of companies starting here will encourage more.

HEALTH TEAMING

Interview Team

- Celeste Yeakley, Team Leader
- Barbara Fossum
- Lusia Guthrie
- Cheri Kirby
- Eric Sloan

Who we met with

The team's main interview session was held on Monday the 11th July with Dr. Patricia Crook, Mr. Richard Blake, Mr. Stephen Dippy, Mr. Hugh Forde, Dr Jorgen Michaelis, Ms. Barbara Erichsdotter, and Ms Alexandra Sideris. During the week though, additional informal discussions were conducted with various individuals.

Case Studies

1. Hamilton Laboratories
2. Dynek

Hamilton Laboratories Case Study

Mr. Richard Blake of Hamilton industries: A company combining science and history to produce quality pharmaceutical products for everyday use. Staff of 70, and turnover of \$50m. Established over 70 years ago (1932). Started with sunburn cream. Bought shares back so family now owns 92% of company.

- Graph modern science and technology
- Innovative niche products
- Export (outside of country) 15% of sales
- Fully licensed manufacturer. Export to 20 countries without any lab accreditation (except US)
- Full marketing organization and have 22 sales reps
- Products
- Suncare, ENT, dry skin, neostrata product range
- Sun care products protest against suppression of immune - = " system = superblock – have real problems penetrating the US market
- Projects with universities – good medical research facilities
- New Products and projects
 - o Be innovative
 - o Offer a unique benefit
 - o Fit a niche market
 - o Fit in the with current product range
 - o Show a healthy profit margin
- They have had to refuse offers of sale because the buyers have wanted to move it to Sydney. The family owns 92% of the company and is facing what to do in the future as far as leadership from within the family or outside.
- FDA is real barrier to them selling in the US.
- US is the biggest market for SA health products. There is now a place on the US FDA web site that promotes import to US (just came up last week)
- Patent office in Australia is just letting patents through and leaving industry to battle it out.
- Would one goal be "import replacement" to reduce the 90% import.

COMMERCIAL IN CONFIDENCE

- Barriers of getting products into their own hospitals
 - o Multinationals can bundle more than one product together – smaller companies in SA cannot do this and are blocked out
 - o They have not invested in developing relationships with hospitals. Sometimes they just lack business savvy.
 - o Go to clinician to get them to help develop next generation products.
 - Example: local manufacturing making titanium, but they import instead at double the costs (tall poppy syndrome because one of the owners is one of the surgeons that does the surgery – the doctor should sell his portion of the company)
 - o People prefer to buy locally if they can, but this doesn't cover the health sector.
 - o A few years ago they launched a campaign to 'buy Australian' but there was a ZERO result in sales increase.
 - o Dick Smith is raising the profile again for Australian products. Extortion threat against a company called Heron – Panadol was the other product (but it is still made in Australia). This has focused the media on the issue again. At the end of the day, the quality needs to be as good and the price comparable.

Dyneke Case Study

Patricia ????? started Dyneke with \$3k and an idea – came out of Johnson and Johnson (she is a salesperson).

- Thought the market was easy but quickly learned that they were “treading on the hallowed ground of large multi-nationals”
- Realized that they would have to go global quickly in order to survive. Started in 1974.
- Australia didn't understand that they should support health issues here – still on going because of large importing. Attitude was that Aussie goods aren't good quality (here in Australia).
- Manufacturing base is not great – overcome that now – they are CE marked, but have not worried about FDA just yet.
- Issue was that they had a good quality product, but was not recognized here until 2 yrs ago. They tend to specialize and find a niche market – go in low under radar.
- 1993, the Brown govt (liberal) came in and invited her on the SA development council. Talked about what they could do about small businesses. Patricia was the one talking to them about health being a significant business “health is wealth”
- They gave her money to make a video (but attitude was, fine, but you will have problems finding enough health industries) – in actuality they could have done a miniseries! They have identified 24 industries.
- Finally, she convinced them that 'health is wealth' and they did some statistics on health. In the 3 areas on the video, they found that there was a \$2 B market.
- They have talked about changing the name 'health' to 'wellness'
- The council was disbanded because it became too powerful. So it changed from SA development council and it turned to Business Vision 2010. Patricia is potentially going to be president of the business council.
- Women are starting to make inroads into government (CEO of city council, etc.)

- Found that there is an (embryonic) industry in health. Called it Australian Health Industry (not SA because it is national) – 5yrs-. Barbara came on board.
- Still seems that the government is not serious about biotech. They want to see the money on the table. They still don't have resources or a decent budget.
- They see health as being able to 'cluster' like other industries (e.g. defense) and leverage talents.
- \$4B R&D in health industry in Australia (\$7B at J&J in comparison)
- Her opinion of CRC model: they should be run by business – because academics have a horizon that keeps going out. They have great academics, but she'd like to see more business structure.
- Like to see incubators
- Like to see SMEs and more small businesses. The state has 64,000 businesses, 54,000 have only 2 or 3 employees. They are "small with a capital S"
- They have people who do not have degrees who are running companies, but they feel intimidated by academics even though they are highly qualified and have developed -they've 'managed on the smell of an oily rag'
- Family businesses fill a very important role, Calypso, Michelles, Coopers, wine industries
- How do we get family businesses out of the cycle of 'success' to reinvest and come out of their comfort zone? They think, "Why should I?" They have done it really tough and they are beaten and feeling fragile. They don't want to try again because they've been beaten around so much. They have comfortable lifestyles now, but don't want to engage in business again.
- Mentoring happens through "business vision 2010" It is happening and isn't talked about a lot. More communication about this is needed. Could we play on their sense of responsibility? It would be good to raise awareness through business SA. The people feel 'so small that what could they contribute?' They are largely ignored.
- The x-ray, Xerox came out of this state, but it wasn't commercialized here.
- They are organizing a forum for the health industry to get academics, business people, etc. so that they can collaborate to increase their business.

Facilitators:

- Major training, resource and product research area
- Center is in proximity to south pacific countries
- Pioneering work in IT (includes telemedicine)
- Women are starting to make inroads into government
- Australian Health Industries was established
- They see health as being able to 'cluster' like other industries (e.g. defense) and leverage talents. Clustering engages leaders and working through opportunities
- Family businesses fill a very important role, Calypso, Michelles, Coopers, wine industries
- Mentoring happens through "business vision 2010"
- They are organizing a forum for the health industry to get academics, business people, etc. so that they can collaborate to increase their business

Barriers/Obstacles:

- Health is not recognized as an industry by the government
- They import most of their products (11B), 90%
- They still don't have resources or a decent budget
- Cultural

- They think “why should I?” They have done it really tough and they are beaten and feeling fragile. They don’t want to try again because they’ve been beaten around so much
 - they feel intimidated by academics even though they are highly qualified
 - The people feel ‘so small that what could they contribute?’
 - S Australians don’t ‘talk up’ the innovative infrastructure of SA when they visit other areas
 - People don’t want to double our population – don’t want the change
 - Close-knit community – don’t know everyone is capable of and they stay secular
- IP
 - There is not a good model for IP transfer in this area. Researchers shouldn’t ‘beg for money’
 - Spinning out IP from a CRC to a new company is not a good model currently – it inhibits new business and depletes university resources (inventor leaves)
 - There is no ‘norm’ for rewarding inventors
- The crown law is the first step (they ‘protect’ the government) impede the development
- To keep youth in, support young entrepreneurs getting involved in innovations or services for the aged (use what you have, and create a social sense between young and old).

Issues/Possible solutions:

- IT is “doing very well” in the private sector where they have control of infrastructure.
- There are many opportunities for growth since they could pull back from imports, they have a lot of research and potential IP from CRC
- Her opinion of CRC model: they should be run by business – because academics have a horizon that keeps going out. They have great academics, but she’d like to see more business structure.
- Like to see incubators
- Like to see SMEs and more small businesses
- Mentoring is happening and isn’t talked about a lot. More communication about this is needed
- Action item for SA is to get the real figures on young people wanting to leave SA
- A good slogan would be “Globalization via Localization”

Interview Notes

Intellectual Property

- What is being done to protect IP coming out of Australian research? It is an issue and goes back to how do you reward the inventor. There is not a good model in this area. Researchers shouldn’t ‘beg for money’ – it should be up to someone else to provide the money.
- What happens to a great discovery coming out of the CRC. The crown law is the first step (they ‘protect’ the government) impede the development. CRC has a center agreement that provides a path for commercialization. CRCs have a mechanism in place. CRCs are better than universities.

- Jurgen is putting a working group together to come up with a common process for inventor reward system. (major issue)
- Universities: 30 to inventor, 30 to university, 30 commercialization arm. University is 'paid twice.' This scenario is OK if you license the technology. What happens if you want to spin out a company? Now the model doesn't work because the inventor goes to the company and the system gets messy and unclear (**INHIBITING FACTOR**). There can be some 'nasty brawls' as a result.

How does US support its industries? Is there a general policy – no there is not a policy. Our government leaves industry alone – the only time it steps in when there is a fairness issue.

Perceptions (from other parts of Australia)

- House prices are lower
- Salaries are lower and career path doesn't look exciting
- How do you keep good staff in Adelaide?
- Benefits of being in a small community need to be addressed
- They just had all their interstate sales people to Adelaide last week – and they were surprised to find out so many things going on.
- People want to retire here and to raise children here. Perceived as a great place to send your kids to school.
- People don't want to double our population – don't want the change
- SA residents don't talk up the area when they are in other regions. They do not promote this state. The reason is unclear – it could be that they don't understand it themselves (BV2010 has produced a pamphlet to help this = business ambassadors)
- Action item for SA is to get the real figures on young people wanting to leave SA.

SA used to be seen as the innovative state, it is the second place in the world to give women the vote. also early for women entering universities. Now they are seen as being behind – even though they don't think they are. "sleepy hollow and poor relative' community. There are cultural issues that override everything else that are going on.

Overview

Barbara: Health is not seen as an industry by government. Health outcomes compare favorably against the rest of the world (except for indigenous culture).

- Average age for women 85 for men 81.
- Everyone has health care – universal for natives and visitors
- Industry s worth about 44 billion dollars. Small to medium companies and very highly skilled labor. 800,000 people and 8.5% of GDP
- Bane of existence is that they import most of their products (11B), 90% is imported from the US (medical devices, pharmaceuticals, medicine).
- Health IT – Australia is doing very well
- Industry can only grow.

Video:

- Major training, resource and product research area
- Center is in proximity to south pacific countries
- Lord Florey played a significant part in developing penicillin
- Foundation has provided a rich infrastructure – 149 doctors for every 100K citizens (3rd in the world)

- \$2.6 B in investment
- Five categories
 - Medical training and paramedical
 - 2 medical schools
 - Accepts Australian and overseas students
 - Affiliated with major teaching hospitals
 - Continuing and distance courses (along with in-county training)
 - Most broad range of paramedical training
 - Dental education
 - Specialist medical services
 - World leader in Australia cranio-facial unit (They visit other countries or bring patents in)
 - Renal transplant program
 - Cardio Thoracic services – one of the largest in the world – 99% success rate of 12,000 cases
 - Hematology bone marrow transplant unit
 - Research (world class)
 - Both public and private
 - Technical, scientific and management training
 - Establishing quality control
 - Biotech company: gene modified animal organs for transplantation. Also developing and genetically engineered drug for curing certain types of leukemia
 - Medical services and hospital infrastructure
 - Pioneering work in IT (includes telemedicine)
 - Live audio and visual links (100s to 1000s km away)
 - Help in establishing cancer registers and other health surveillance systems
 - Disability assistance services
 - Child and youth health services
 - Medical products
 - Private sector companies
 - Faulding – value added injectible and oral
 - Dynek sutures
 - Norseld: medical cooper Bromide laser
 - Accuhealth : small business award winner – non-invasive acupuncture (for self treatment).

Faulding owns a company in NJ called PurePak. There are currently talks right now for Main to buy Faulding.

Medical Informatics: is 'new' in the last 3 years.

Australian Health Industries: was established to help companies that produce goods and services for the health sector. They are funded by government and have evolved from a regional to a national organization, although SA is represented heavily on the board.

Jurgen was recruited from Germany to run Bio Innovation.

Hugh: What is really happening in Australia, why Business Vision 2010 was formed in the first place? Start with where we are and develop what our true vision is. Local

chamber of commerce set up BV2010. Also known as the cluster project. Forget about government and perceptions and figure out how to get people together. Clusters are a way to get businesses together to collaborate. Globalization issues have driven the need to have localization clusters used to facilitate this growth. (See color handout on Industry Cluster Development).

- Can't compete without understanding what collaboration really means
- Process has taken 5 years to development and is now ready for kick-off.
- While they are a very close-knit community and it is very hard to get into it, this is now being shattered because in order to survive companies have to collaborate.
- OECD has been working on a similar project.
- If we look at health and aging: there are many pilot projects in terms of health – these have become nice models for examples of successful approaches.
- How can we build systems and communities that address aging and the aging processes (e.g. of collaborative effort)? Perhaps this is where the commercial opportunity is.
- (Handout) BV2010 on Healthy Ageing and also handout "Healthy Ageing" – Agenda item 5.
- SA has historically had a low birth rate. Why?
- Do we have more old people – need to answer the questions. Hugh has figures (?)
- Professor Dick Bandy might have figures for migration rates
- Have to mobilize people and engage with them.
- We don't all know what each other are doing. Cluster engages leaders and working through opportunities.
- They are starting to recognize that they have something that the world can use. Moving away from government-sponsored activities and into company collaboration.
- We need to be confident community that can identify what we can do and how we can do it.
- Confidence level is growing when compared to 3 years ago. "As trust grows (by BV doing profiling of businesses) so will performance
- Want the cluster project to be export –oriented.
- They think that this clustering process will help develop new start-ups because this is the 'thrust that we can pull behind us' for product development.
- Health infrastructure is in place and is 'mature'. They need to figure out what edge there is to lead from.
- Some discussion about 'where the dollars are'... on the bubble chart of industry sector: cluster strategic analysis – **HEALTH** is not on there. Hugh explains that they are looking at where BV2010 can concentrate their resources. If they can't add value, it isn't on there. Hugh is saying that this is on the colored racetrack chart (dated March 16) **GLARING GAP**
- For example, what has been done in the wine industry? The entrepreneurs are providing the 'spark'.

Mr. Stephen Dippy: Clustering has been proving itself to be valuable to the defense industry.

- Background – been in business for 12 yrs on financial side and 8 yrs on clinical side. MCA = Medical Communications Associates;
 - o MCA, Health informatics cluster: system to inform doctors in helping to get information about the patient's health.

- o Idea is to present information about the patient's health to figure out standards.
- HER- GEHR = good European health record; storing data according to standards. 2 key people were South Australians. Looking for government funding to develop that arm (\$5M)
- Major problem: systems were pilot systems. There is a strong bias towards local expertise. People will help to develop the IP and they let his company have the IP. The problem is the government control of IP and IT. Government outsourced IT/government computing so it is not driving local creativity. There is now no money to put into rolling out these systems. The outsourced people get first crack at all public IT systems. This is a definite impediment to progress. What is the outcome for small business – need to ask the government what has been achieved – what is in the contract. They were going to use Oasis for state IT, but they caved, and then they signed an agreement with Canada.
- Decided that they need to work with other companies. Huge amount of knowledge and skills in:
 - o 3X University
 - o Clinical
 - o Nursing
 - o Web-client information
- Major project (mnet \$36M, they think they will get \$2.4m) galvanized things now. Philosophy is that they will add into what the government is already doing or have potential for funding from other organizations.
- M-net project: federally funded scheme to provide a wireless network along the Adelaide precinct. One square mile involved. This was a technical proposal. They won funding for it because they had a health informatics angle on it. This is the latest technology 3G 'stuff.' They'd like to nudge the border to include 2 more hospitals. They have also included Whaler (?) using an optical fiber link (and other aboriginal regions). They have the support of the Adelaide city council.
- 10% of hospital admissions are from diabetes. They are proposing to work on diabetes and long-term care. Want to include retinal imaging/diabetes/care planning. This will get them federal funding. This must be a consortium effort in order to accomplish this big task.
- Mnet is a commercial consortium by 22 companies. It is up to individuals to get up and ask for \$\$\$\$. There are industry areas – this is only partial funding
- Ross Adler is chairing World Congress 2002 that is coming to Adelaide in March.
- Telemed: is a success story from the university of Adelaide. They provide telemedicine for in-vitro fertilization.
- Government institutions are not allowed to go out and borrow money. "We need to be able to do that to give people the opportunity" (Patricia)

Dr Jurgen Michaelis of BioInnovation: What is here now (public and private) and how he sees the bioscience cluster and what strategies and initiatives are there. One year old organization – public corporation. Reporting to the deputy premier. Funding of \$16M over 4 yrs to put in to strategic areas. Big condition on state government.

- Base: 3 universities, 4 teaching hospitals, 3 medical research centers
- Public: CSIRO, Aus Wine Research institute, SARDI, PIRSA Food and Fibre
- Private: Bresagen, Gropep, bionomics, Faulding, Hamilton, Geneworks, Medvet, Cmax, Northfield, and Prosthetics

- Collaboration: 6 CRCs: viticulture, sustainable aquaculture of finfish, Australian weed management, plant breeding, water quality and treatment, tissue growth and repair NOTE: There is only ONE CRC in the medical area.
- Other collaborations: molecular life science building, the Waite research precinct, livestock systems alliance in Roseworthy, CSIRO division human science and nutrition headquarters, Australia's first industrial bioscience precinct.
- Bioscience base:
 - o R&D based on excellence,
 - o 16% of major national grants;
 - o Critical mass of funding \$200 p.a.,
 - o Culture of collaboration "Island Culture", SA is free of major animal diseases
- Bioscience cluster:
 - o Research – focus on key competencies, medical and plant/animal, identify applications;
 - o Technology transfer – companies are spinouts, gaining momentum (just reviewed 10 applications for pre-seed funds. These companies will be formed very quickly)
- Strategies and Initiatives – Jurgen was given this but is going to pare it down and prioritize
 - o Generate strategy and policy:
 - Advise government and institutes on commercialization
 - Whole of state collaborative approach
 - Identify researchers working at leading edge
 - Define government role.
 - o Build the research engine
 - Identify core competencies
 - Establish as strategic R&D committee for planning
 - Build awareness of funding options
 - Attraction of high-level expertise
 - o Enhance the Entrepreneurial culture – Jorgen thinks there is plenty of entrepreneurial spirit – wants to enhance mentoring and open exchange of information (could be synergy with Adelaide University program – hook up with Rex)
 - Education programs for commercialization
 - Encourage industry to participate in mentoring program
 - Encourage open exchange across bioscience community
 - Facilitate technology interchange between organizations
 - Encourage technology transfer and channel into start-ups
 - o Create the commercialization structure – suggest that bigger companies collaborate, provide funding and take interest in new companies – (Barbara's comment)
 - Establish bio innovation SA
 - Establish tiotech advisory council
 - Establish pre seed capital fund
 - Establish venture capital fund
 - Link bioscience industry with federal strategies
 - Enable scientists and start ups to travel internationally
 - o Key word summary
 - Young

- Strong R
- Full of technology
- Strategic plan
- Collaboration
- Quality of life
- Whole city is full of technology. Collaboration is high in this city – seems higher than other places.
 - o Send SA technologies to US for MSSTC program
 - o “Everyone is an inventor in SA” – Barbara E. “We are sort of our own worst enemy” in an entrepreneurial sense.
 - o Government has been intervening and suppressed entrepreneurs. In Jurgen’s area, this is encouraging that the government is trying to help. If we had the same kind of approach across industry. This innovation model might apply to everyone
 - o In US, people start ventures much younger than in SA – failure is not a big thing. US has a name for it: serial entrepreneurs. This is different for SA this is a major barrier particularly for existing companies. If a new path causes a collapse of a company, then finances will be difficult to get in the future. It is harder to get established companies to get expansion money than it is for ‘blue sky’ ideas. There is not “patient capital” available.
 - o Entrepreneurial atmosphere is here, but there are structural issues in the culture. We have to find ways to find ongoing benefit (5-15yrs) that there is a net income streams for jobs coming back to SA.
 - o Biota: (developed Relenza) – had no understanding of capital requirements, had to link with Glaxo, 10 yrs to market – but is that income stream going to come back to SA?? Cannot get to critical size – companies locate themselves in other cities or even overseas. Need to have “centers of excellence”.
 - o Need to think of smart ways to keep the business HERE not developing and sending overseas. Need some smart ideas on how to do that.
 - o IC2 – entrepreneurship is taught in the context of social responsibility/civic entrepreneurship. Almost every single Billionaire that has come out of Austin has given dollars back and has been very conscious of keeping jobs in the area. This must be instilled in the culture through the educational system Concept of shared prosperity.

ICT FOCUS GROUP STUDY

Adrienne Hughto, Bill Minter, and Simi Shonowo

Interview Team

Kevin Hudson
Adrienne Hughto
Bill Minter
Simi Shonowo

INTRODUCTION

Paul Wiszniak, Senior Investment Manager, Information Industries of Invest South Australia hosted the session. He gave the current status of Invest SA, and also brought in local companies for case study analysis. There were common themes among the companies that are explored in this paper and used for analysis as a microenvironment for for increasing the rate of technological advancement within the Greater Adelaide Area .

Background:

- A lot of the start up companies are spinning out from DSTO (Defense Science and Technology Organization). Note: See Article in packet about DSTO.
- Department for Industry and Trade identifies and weans opportunities for investment in Adelaide
 - o 4 promotion features
 - o 4 divisions
- State has limited resources so they cannot focus resources on things that are already working
- There is a primary focus on the growth sector
- The state of South Australia tries to give companies non-financial incentives to locate in South Australia
- There has been a primary focus on making attractive incentives to companies based on the strengths of the state
- Ranking on the issues that are considered in locating a company:
 - o Stability
 - o Costs
 - o People
 - o Low Turn Over
 - o Location
 - o At #7 is the place to live consideration
- Goals for the ICT Industry in SA
 - o Trying to attract companies with IP that are interested in developing it
 - o Sectors of IT focused on Wireless – Satellite, Software support

Comment: Defense Science and Technology Organization

Advantages of doing business in South Australia

- Highly Skilled workforce
- Highly educated workforce – 80% tertiary education in SA versus 40% Australia wide
- Highly wired with 30%/year fall in broadband access prices.
- Microsoft runs network of Australia out of Adelaide
- Good company after care
- Low Staff turnover rate, attractive for specialized jobs

COMMERCIAL IN CONFIDENCE

- Anchoring for business operation in the Asia Pacific Region
- Great return per employee
- Great Industry clusters that are forming
- Generally have to work harder to sell the business but makes for very sharp people
- Study of the price premium difference from Australia versus Asia Pacific and came out to 5% which is not worth the hassle and the perceived incompetence that inconvenience from bad incident

CASE STUDY PRESENTATIONS

INVEST SA

Paul Wizniak is responsible for identifying and attracting foreign investment to SA, and prior to this, had looked at reinvestment as well as local investment. Now, his section is only responsible for foreign direct investment; and has twenty-two people. The specific focus is on ICT, other teams look at food, administration, etc. They take a marketing approach and do research working collectively with other agencies locally; review and control their own destiny, by reviewing their own sector. They are mandated to work on a state-wide basis for investment opportunities that are good for the region as a whole. Perhaps there is more skill in the city than in the regions, so there is a need to encourage high level IT skills in regions. At this time the real opportunity issues are for investment opportunities within Adelaide and the high IT sector. A remote office is in London called Invest Australia. It is hoped to open a office in new west to establish relationships with them. To get into the door of technical recognition the World Congress IT Global Congress is being hosted by the Department of Industry and Trade. It is also being used to elevate the branding of Adelaide.

The businesses and government have been very active with partnering with various agencies like Austrade (Austrade provides advice to companies on which overseas markets hold the highest sales potential for their product, how they can build a presence in these markets, and what sort of practical and financial help is availableⁱⁱ). The local government is looking to build more joint private partnerships. Sometimes these can have some ramifications like when EDS was awarded governmental contracts as CDC and IBM were unhappy. However, there is a need to sustain/maintain competitive markets in different industry sectors to market as attraction for other companies to come.

Austin is a good place to develop new products before the US gets to see it, could be a capitalization point and makes good test bed environment for companies. Adelaide is also an excellent candidate as a test market. It has already been used by SMART CARD and KFC as a test bed. Medical optics SA one of has one of the largest markets particularly in contact lenses. There are 800 companies with direct workforce, and forty percent of the population has diploma or higher. The Adelaide area is a gateway to Asia.

SA Wish list

- Need people with Business sense and product to market expertise – commercialization of technologies.

FUSION (www.fusion.com.au)

John Chapman did the presentation. This business is concerned with spectrum consulting, software, Media Developers CDROM, Flash and DVD. Within Ecommerce and Internet utilizing JAVA and XML, the business is the second fastest growing in SA. It is Governmental endorsed, and does world wide training for Konica. They do forty percent of work on site, the majority of the other work is from Sydney. Must go out on plane to meet people in order to get business. They have to work harder to be based Adelaide as fifty percent of business is on the eastern coast. The business has had low barriers to entry, customers are naïve and they try to show them products in simple terms. The opportunities are being a dot.com where need to tap into people that can bring products to market. Also, they need think in terms of distribution for joint ventures with other companies outside of SA.

RECALLDESIGN

Frank Falco, CEO led the discussion. This company is a services software services and graphics with Flash capability. It grew five-hundred percent last year and produces twenty percent of its revenue from SA, the rest comes from Singapore and the USA. They train businesses to develop their e-commerce and business applications. The consulting arm experiences different industries and problem sets. The product development arm reengineers tools and libraries into completed applications. Consulting business is the feeder for the product development that handles the entire process. The SA Government has had a positive impact with training, and investment. Recall hired local graduates, but the law does not allow for student to be directed. This company did receive the benefit of sponsoring a student though from research that was done by this student. Cash is a problem now. One thing that slowed the company down was difficulty of finding the type of people needed with skill sets required. The last six months has loosened up a bit. Management and business skills from University are previously unused assets that are now being utilized. MYB was stated to be one of best-run companies in the technology sectors and Frank is the chairman of his board.. There are plans for on spinning off smaller companies. It was noted that it is easy to locate the IP that goes into these companies, but there may be issues with tax implications

ROCKSOFT LTD (www.rocksoft.com)

Ross Williams presented and Veracity is the software. This company is involved in network based integrity assessment. SWIFT is the most significant customer; sent two years evaluating – most customers in USA with little trade Australia. Strictwire is the competitor. Would like to sell be in partnership with EDS to get computer security into multinational companies and government, but they is having trouble getting in the door. They feel they were spurned from the DSTO. Their overall target is the blue chip companies. Obstacles to obtaining capital include: no track record revenue, Australian investors are very risk adverse, American investors say the numbers are not on paper, and a major barrier is a lack of time for research and documentation to obtain the funding

PROPHECY INTERNATIONAL

The company is a rapid application assembly tools area that has been in business quite a while. It is doing medium to large-scale work. It utilizes e-Foundation as the Enterprise Data, Framework to Business Apps to Web deployment and is focusing on the US market. There are over one hundred people in the company.

Obstacles were taken into account. One of the biggest is brand awareness as they are small player in a big market. The challenge is to get put on lists for evaluation. They are

analyzing competitors and getting market research. Many companies claim to do what they do, but do not really what they do – may try to use AUSTRADE for this service. Traditionally Prophecy did not have a strong marketing focus originally but do now. They got a contract through tender (open bid) released to get foot in door with Colorado State, and leveraging that business. They got the first business through a trade show in UK. Now, have strategic alliances with SUN and EDS to leverage off of the bigger players.

SYDAC

SYDAC does simulation to specific outcomes doing electrical engineering primarily in software and also in mechanical. They use internet technology for distribution. The company is trying to put simulation on the desktop to bring prices down.

Access to capital was stated as not a show-stopper, but what to do with developing an international market is a problem, took on three extra marketing people, but only one in three of the marketing people worked. They learned that the only marketing people that were effective were ones with a technically based background.

BEONIC Pty Ltd.

Peter Cohen, Managing Director states Beonic is a traffic knowledge system. The owner worked in a shopping center and left the company with a vision to monitor the traffic. A family interest has put about two million into the company. It has the largest range of traffic management systems in the world – starting at \$200.00 AUD.

The reason he chose SA is because it is inexpensive, engineers are the cheapest in the world, ranked as 2nd cheapest house in the world here – used to working with small amounts of money. It is not easy to go to US because battling exchange rate just to deliver the first sale. Potentially the product is a three billion dollar industry, the Australian dollar value is at 200 million. Retailers have forgotten the sense of basics as they gone from bricks and mortar straight to internet. They have forgotten about the importance of customer at shop floor level and to make the staff accountable for every customer that walks into the floor. The product can put marketing campaign designed to specific portions of store where traffic is so target in best manner. The total retail sales market is two trillion in the US, but this company has short-comings in raising capital and enough sales to get the users and persons needed. Locally used the University of Adelaide to gather knowledge on marketing and used Federal Government grant to get the ball rolling.

There is a feeling of isolation in Adelaide as most of the competition is in eastern states. Adelaide seen as small city, so must drive much harder to get to where a business wants to be. Companies have proven if they are able to get sales out of Australia, the world at fingertips. The company expressed that it needs support from government for exposure, but not getting it. Paul Wizniak questions if it is up to government to do this. It was also expressed that there is a multitude of grants but the knowledge of how to get it, and how much does it cost to get them. The first big distribution deal in the US is probably the hardest. Thoughts were stated that SA government is the strongest of the Australian governments with providing support.

Main Quotes:

“We are not here to sell cheapness but we are here to sell value”

"Because we are good we can be in Adelaide"

SUMMARIES AND OBSERVATIONS BY THE IC2 TEAM

The observations are listed by analysis that seems to be across the board for the companies represented at this presentation and focus study.

There are many strengths that can be documented. The active role of the Governmental endorsements and grant investments appear to be paying off. Further the Government has had a positive impact on companies with training and investments. The Federal programs are available for additional help and support to round out the local governmental objectives. Universities have cooperative programs for graduate level students to work and do research with private industry. The Universities marketing research has proven invaluable as well. Bootstrapping and working within a difficult entry-level market seems to be strength building from early on for the startup companies. SA is inexpensive, so working with small amounts of money is attractive to foreign as well as local businesses. These companies not only state, but feel if they are able to get sales out of Australia, that globalization will be made easier. Building and expanding on these strengths can help many companies and startups develop and expand at a more rapid pace.

The weaknesses that companies can encounter in the Greater Adelaide Area were evident as well. SA is difficult market to break into, as there is not big demand for high tech. Marketing and business skills are difficult hurdles for new companies. Many do not have proper training, understanding, time, or are aware of costs associated with obtaining governmental grants or help. The potential is there for young businesses to rely too much on the government for guidance and support. Business has an air of isolation in Adelaide since most of the competition is in eastern states. Adelaide seen as small city by others, so must work harder to get results. The competition from the more established markets must be taken into account, particularly closer to home on the east coast of Australia. Most of the weaknesses can be overcome. Continued work to brand and market the area with emphasis on high tech companies is an effort that will take time. Access to documentation and links has been done well in the past, but must be improved upon with information updated and access usability a priority.

Areas of opportunities to capitalize on also demonstrated an area of commonality. A good area was focus for companies to work on joint ventures outside of SA, specifically with blue chip companies to capitalize on global markets. The big markets most desired by these companies are in order of prominence: USA, Asia, and eastern Australia. The blue chip companies can also help small and medium size businesses to establish credibility as well as break new ground. Essential Computer Systems (ECS) has proven resourceful and is now teaming with a major US software developer to jointly market their range of financial products in Asia.ⁱⁱⁱ The findings by companies that in the high tech world that the traditional marketing staff does not work, but requires marketing staff with high tech background for the companies to succeed was demonstrated. The MSSTC program utilized by the University of Adelaide in partnership with the University of Texas will be a good source to locate this particular breed on a local level, and should be taken advantage of. Additionally, attention should be paid to not only hosting, but demonstrating a presence in the World IT Congress to establish Adelaide as an IT leader is important. There has been a lot of money spent getting the Congress to

Adelaide, so the costs of participation are relatively small, but the loss of return could be great without a participative presence. It is difficult for some of the local companies to have a presence because US dollars (high cost) - so should be looking for alternative methods to get optimal participation from businesses in the Greater Adelaide Area such as trading services for presentation spots or sharing costs with other ventures.

It can be seen by the IC2 team that Paul and his group are sensitive to listening to the people (business partners and citizens of the Greater Adelaide Area). They are very aggressive and intelligent in working to get IT and well as tap into local talent. The documentation and marketing of the area is outstanding. Expectations of the IC2 team are that the observations and recommendations made in this study can help to enhance the IT future of the Greater Adelaide area when supported by such a group as Invest SA.

| Issues | Opportunities |
|--|---|
| <ul style="list-style-type: none"> • How to attract companies with IP to SA when there is the Sydney and Melbourne are better places mentality being propagated in Australia • Perception of SA • Have to work harder to sell | <ul style="list-style-type: none"> • Need to work on branding Australia to the international community <ul style="list-style-type: none"> o Opportunity brand South Australia as the location for a test market for R&D since the population is small like it has been done in Austin Texas o Can also promote SA as a stress free test environment • SA also offers the opportunity to build and expand unlike Sydney or Melbourne that would have problems with expansion. • Branding SA as the learning center vs. the market atmosphere that is prevalent in Sydney and Melbourne • Branding SA as a test market • World congress on IT in Adelaide to brand SA as IT place <ul style="list-style-type: none"> o Help establish SA as the region to come and meet people and grow |
| <ul style="list-style-type: none"> • Establish Critical Mass for Industry clusters | <ul style="list-style-type: none"> • Get the big multinationals to help in branding the South Australia as a good place to do R&D • Governmental encouragement of precincts and enclaves for industry clusters • Collaboration between small ICT companies is happening not only in SA but also Nationally • Biotechnology precinct • Therberton District – clustering for the emerging companies. • Capitalizing on the complementary connections that are available with UK, US, and Europe • Strong wireless RF competency that can be advertised <ul style="list-style-type: none"> o Manufacturing with IP competencies o Some communicated and some not. • World Congress in IT to help bring clusters and change image to retain graduates. |
| <ul style="list-style-type: none"> • Attracting capital <ul style="list-style-type: none"> o Not easy to value the work | <ul style="list-style-type: none"> • Get supporters and those knowledgeable about Adelaide and SA to support. • No language barriers helps with control and working |

| Issues | Opportunities |
|---|--|
| <ul style="list-style-type: none"> that is done o Selling the business case o Downfall of a whole host of “.com” companies | <ul style="list-style-type: none"> together o Need to be careful with this because attention will need to be paid to the culture differences o No things to overcome in basic understanding • Possibly not talking to the right people to get funding needs to be looked at as a possibility o No mention of tapping into the friends, family, and fools network to get started on working on ideas • Need to get more creative about possible solutions o Sell to distributors that are not traditional channels |
| <ul style="list-style-type: none"> • Certainty of Head Offices versus Branch Offices | <ul style="list-style-type: none"> • Current Head Offices in SA o BAE Systems - 5,000 employees with ½ employees in SA |
| <ul style="list-style-type: none"> • Public is not very informed about how big the Electronic industry in SA | <ul style="list-style-type: none"> • DRAM made in South Australia • SA Electronics Industry in 2001 o SA produces about 33% of the SA Manufacturing Industry with 8% of the employees o Attracts 25% of all private R&D investment in SA • Emerging center for innovation and technology – Technology Fast 50 contains 7 companies from SA |
| <ul style="list-style-type: none"> • Low Barriers to entry | <ul style="list-style-type: none"> • Lots of IP available from the companies |
| <ul style="list-style-type: none"> • New Industry o Not really informed about the industry o Predominance of the traditional IT industry o need the expertise for the new wave of industries. | <ul style="list-style-type: none"> |
| <ul style="list-style-type: none"> • State has limited resources to throw at deals and does not feel like they can compete effectively | <ul style="list-style-type: none"> • Pool resources and limit the fragmentation of efforts to effectively focus on a vision. |
| <ul style="list-style-type: none"> • Not easy to put value on work | <ul style="list-style-type: none"> • Sell from the business case • Discover possible alternatives that the company pays for that the work could replace and use that to value the work |
| <ul style="list-style-type: none"> • Loss of the “.coms” | <ul style="list-style-type: none"> |
| <ul style="list-style-type: none"> • Need people with product to market expertise - commercialization | <ul style="list-style-type: none"> • MSSTC training program with University of Adelaide • Business Center helps with training, money, and grants • Education has help put forth effort in recruiting students at no cost to business • Collaboration between students, schools, and companies for industry |
| <ul style="list-style-type: none"> • One product | <ul style="list-style-type: none"> • Think of and look at other possibilities that develop as a |

| Issues | Opportunities |
|---|--|
| <p>companies</p> <ul style="list-style-type: none"> Weak business models of small companies | <p>possible addition for the future</p> <ul style="list-style-type: none"> Make a list of the opportunities that are pointed out for expanding efforts by the clientele and assign staff to take up the ideas and develop a plan for the future while majority focuses on the current business Possibility of using IP from product to develop a consulting business |
| <ul style="list-style-type: none"> Distribution Channel / Partners International marketing and trying to get into the US market is hard | <ul style="list-style-type: none"> Use Adelaide and SA as a test market because if it sells here it will sell elsewhere. |

INNOVATION, SCIENCE, AND TECHNOLOGY CENTRE

Monday, July 9, 2001

Submitted by Pete Polonsky

Interview Team

- Pete Polonsky
- Dave Gibson
- Martha Flores
- Catherine Polito

Strengths

- There are already a wide and varied number of entrepreneurial support initiatives already in place, including: Incubators, Mentoring Groups, Business Centre, 1st Tuesday, Enterprise Workshops, Say Yes, NEIS, EEDA.
- There appears to be a strong, core group of smart, talented people in South Australia who compete very favorably within all of Australia when they get the opportunity to compete. Examples mentioned: Comet (Commercializing Emerging Technologies) program- 20% comes from South Australia. 7 of the recently announced Fast 50 Tech Companies of all of Australia were from South Australia. There 3 Universities ranked in top 15% of Australia.
- South Australia has a high degree of Export expertise, which is critical if an enterprise wants to grow to be of any significant size. South Australia exports to 50% more countries than the rest of Australia combined. Examples of companies successfully exporting- Gropep, Vili's, Mining Companies, and Wineries.
- Several core competencies with opportunity for world-class status in Software Engineering; Ag Science- WIITE is largest Ag Research facility in the Southern Hemisphere, Biotech.
- It is also very important that there is the recognition that something needs to change.
- Electronics industry is strong and growing.
- Largest concentration of telecomm R&D in the country is in S.A.

Weaknesses or Barriers

- There seems to be a disconnect between government and successful Private enterprises. Many in the government agencies state that one of the biggest problems is the lack of access to capital. However, those in successful private enterprises disagree. They say that if they have a strong business plan and a good management team, there is plenty of money available.
- The incubators and accelerators are lacking in a set of screening criteria to determine which deals to focus their resources on. There is a need to target high growth potential opportunities. However, many of these government-funded incubators and accelerators have no screening criteria at all. They act more like benevolent landlords. They also need to set milestones for enterprises so that if they do not meet them, they can get rid of them and make room for other new opportunities.
- The Government agencies feel like their efforts and initiatives are only reaching about 1/3rd of their potential audience. There needs to be better communications and follow-up with their targeted audience, which is the private enterprise businesses that are using their services.
- In addition, there is a lack of coordination and communication among the state and local organizations that are focused on providing entrepreneurial support services. This is causing overlap and redundancy.

COMMERCIAL IN CONFIDENCE

- The incubators and accelerators do not have an integrated and coordinated strategy to leverage talent, knowledge, and know-how. It is not known where the good new business plans or deals are coming from.
- Success stories are not being effectively communicated and celebrated which contributes to the defeatist attitudes that are widespread. Government lacks credibility in this area; most Australians hear the same success stories over and over again, so they refer to these stories as “hype.”
- Tall poppy syndrome is a huge momentum killer.
- The private angel network does not seem to be in touch with the opportunities that are being created, and they do not seem to be willing to invest in start-up or early stage opportunities.
- The majority of the Venture Capital community is not located physically in S.A. making them a little less accessible.
- It is not clear how S.A. stacks up to other regions.
- Adelaide lacks a cohesive internal and external marketing mechanism.
- Education system does not promote entrepreneurial activities.
- Other Australian states have more Headquarters offices which naturally attracts more people and investment.

Possible Solutions

Realignment of Incubators and Accelerators

- Take the incubators and accelerators and give each one specific industry focuses, or foci, such as Ag Science, Bio Med, Software, Internet, Wireless, etc. Then within each incubator, establish the linkages to the R&D areas at Universities and Industry. This will reduce redundancy and will help to establish strong core competency centers. This should help to attract more qualified investors.
- Incubators and accelerators need to establish specific screening criteria for their industry set and use them.
- The incubators need to regularly interface together to ensure they are leveraging each other's resources, such as talent and know-how.

Education of Private Angels

- Local angels need to be made aware of the strengths of the local entrepreneurial environment.
- A private enterprise champion or champions needs to be identified to assist in the education and engagement of the angel network. Proactively seeking local angels and inviting them to a forum that is NOT another government session would help to get this process started. It is very important that this new effort does not come off looking like just another government program. If you are going to energize your potential angels, you need to get the successful private sector enterprise executives involved.
- Get your Packards and your Murdochs to put together an SA Investment group. This may be a way to get several angels to team together on opportunities.

Proactive PR/Marketing Campaign Developed in 2 stages

Stage 1- Internal with S.A.

- Utilize high visibility sports personalities who will identify and proactively celebrate local business success stories.
- Focus on Adelaide's history of being aggressive pioneers and remind them to be selectively proud.
- Leverage the South Australian Innovation fund

Stage 2- External to rest of Australia

- First must do research to understand how S.A. stacks up.
- Promote strengths such as expertise in industry segments of Ag Science, Bio Med., SW Engineering, etc,
- Promote knowledge and experience in Exporting.
- Promote quality of life.
- Promote cost advantages, if they do in fact exist.

Proactively Generate Quality Ideas

- Establish a business plan competition amongst the 3 South Australia Universities that is run by the incubator/accelerator groups. This will help to enhance the business plan screening capabilities of the incubators, provide visibility to S.A., and attract the interest of investors.

Areas requiring further study:

- *Aging Population* – prevalent globally, but what are the older Adelaide residents investing in now? How do we get them interested in investing in the future? (serving on committees, mentoring young entrepreneurs?) What's happening to their money when they die? (i.e. bequests, etc.)
- *"Directions"* – what can the show "Directions" do to promote area industry? Would specific industries be willing to sponsor episodes of "Directions?"

MAWSON LAKES AND TECHNOLOGY PARK

Interview Team

- Simi Shonowo and Bill Minter, Team Leaders. Robert Meyer also contributed to this report.
- The entire contingent from the IC² Institute participated in the tour of Technology Park and Mawson Lakes in the morning of Tuesday, July 10th, followed by a briefing at Innovation House lasting through the early afternoon.

Who we met with

After a tour and briefing on Mawson Lakes including its Technology Park, the group met at the meeting room of Innovation House. Eric Olsen, Senior Manager of Business Development of Mawson Lakes/Technology Park, opened the session with a talk about the history of the project. We then had presentations from the city of Salisbury and the University of South Australia.

A note from the writers: As a development, the Mawson Lakes project has a history stretching back some 12 years when first concepts were developed for a Multi Function Polis development in Adelaide. The focus for progressing a more practical "MFP Type" development became centred on the Mawson Lakes site in the mid 1990s and there has been major progress since then. We realized that for our group to visit in a few hours and come away with the depth of knowledge of the average South Australia businessperson about the project would be unlikely. In order to conduct a full assessment of the project, we would need more access to documents and research used in the planning of the developments, as well as the ability to review market research that was conducted. In the absence of such information, we hope that our comments and impressions will be helpful in conducting your own assessments, and in the development of future directions for the project's many facets.

Opportunities

Technology Park

- Technology Park appears to have reached a critical mass in terms of infrastructure with a mix of major international corporations and small to medium enterprises. The latest version of the Master Plan for Technology Park is in place, and a range of initiatives are being implemented. These include constructing a new Business Development and Innovation Hub with associated 200 person Conference Centre, preparing the "Enterprise Village" area for intensive development (new roads, landscaping and site preparation), and infrastructure works in the "Corporate Quarter".
- South Australia is technologically strong and there are opportunities to strengthen the state's technology base. Technology Park is the logical headquarters of the tech growth sector, but has convenient public transport access issues yet to overcome.
- Strengthening the existing clusters in Information & Communication Technology and Defence & Aerospace Technology makes good sense. Adding a third cluster such as Environmental & Health Technologies would be beneficial, particularly in view of the success story of working with parties including the City of Salisbury to develop a unique and efficient way to handle storm water.
- An opportunity exists to further define and differentiate the role of Technology Park from that of the other technology precincts in the Adelaide region. Technology Park is a place where companies of medium size and large will have plenty of land to expand, a strong local educational system and a city infrastructure that lends itself to advanced technologies. If possible, at some level of planning, the other, smaller technology

clusters in the Adelaide area should be viewed not as competitors for rent dollars, but rather collaborators in the larger effort to make South Australia a more important force in worldwide technology. All the residents, employees, educators and employers at Technology Park should be very proactive in increasing communication through networking between the various incubators and precincts in the region.

- An opportunity exists for the University of South Australia to develop targeted career programs that are world class. It would be advantageous to develop internship programs that acquire a unique reputation: this is the place where you can walk across the street to great jobs, then walk across the street to start great companies.

Mawson Lakes

- The project is attempting to develop the educational, commercial and lifestyle components necessary to make it a desirable and productive place. If the residential component is successful through market demand, all the components of the project will be enhanced.
- The quality of local area government administration in Salisbury (within which Mawson Lakes resides) is exceptional. The initiative of an ecologically responsible solution to storm water flood plains is a story that can be further used by Mawson Lakes, Salisbury and all of South Australia to further position the region as a "green" technology leader.

Case Studies

- **Motorola**
The recruitment of a software group was a much sought-after relocation. Motorola saw the potential at Mawson Lakes and established a facility that now employs over 400 people. Motorola managers know how to sell the Adelaide lifestyle and other relocation benefits, even though they must occasionally convince people to take less salary to come to South Australia.
- **Tenix**
An entrepreneurial company involved in many areas of defence and broader application products, Tenix has placed its Electronics, hydrography (laser depth sounding), and surveillance activities at Technology Park and employs 300 people there.
- **Saab Systems**
After occupying one of the shared space facilities, Saab Systems now has their own building under construction. They have 180 people at Technology Park.

Facilitators

- A 20-year history of working with the local and state governments, and vigorous direction in the last 5 years has gotten Mawson Lakes past the "awkward stage" of new community development in terms of its public relations with other local institutions.
- The most recent version of the Marketing Plan for Technology Park has gotten off to a good start with an organized approach and a further revised Master Plan. Funding for increasing levels of marketing and planning should be continued.
- A coordinated approach to delivering advanced high-tech amenities to the residents of Mawson Lakes means flexibility to provide an array of high-bandwidth services sooner and perhaps more economically than other communities.
- Mawson Lakes can develop examples of homegrown technology-based wealth creation. For Austin it was Dell and other companies who "grew" angel investors as their employees became wealthy and in turn provided start-up capital for other companies.

Barriers/Obstacles

- The university environment would benefit from greater academic diversity at the campus. Administrators are taking steps to improve the situation by offering more liberal arts and fine arts courses in order to provide a richer experience for all students.
- In order for Mawson Lakes to succeed as an ongoing business, development partners will need to have a stake primarily in the sales success rather than simply being compensated to achieve construction goals. Furthermore, development partners need to bring design savvy to the table, both architectural and land planning, in order to ensure that design executes a well thought out marketing strategy.
- Substantial investment in civic amenities is not planned, with community needs foremost. For example, the magnificent water feature the lake represents should be at the heart of the community, with major community features located on the lakefront. Some observers in our group felt that the sales office had supplanted the community center in Mawson Lakes. Although the building may convert to use by the community after a target of homes sales is reached, the overall impression is too promotional with the result that the sense of community at Mawson Lakes, centred around the lake, is lacking.
- The often-described lack of venture capital and angel funding in the region is a factor at Mawson Lakes also. In due course successful entrepreneurial individuals who had derived wealth from their investment at Mawson Lakes and who understand technology could be encouraged to provide angel funding for start-ups nearby.
- The marketing strategy at Mawson Lakes was not clear to us. It cannot be emphasized enough that it is critical that a clear vision of the marketing strategy exists before initiating the upcoming installation of the Town Center. The financial burden of the carrying expense of its cost of several million dollars could be a blow to long-term economic success if tenants fail to take space early on.

Quotes

- “Need to embody continuous learning in Technological discipline”

MINERALS INDUSTRY, INCLUDING OIL AND GAS

Interview Team

- David Schieck, Team Leader
- Amy Blakely
- Anna Hardesty
- Kevin Hudson

Who we met with

The team's main interview session was held on Wednesday, July 11th with representatives from: Adelaide Resources NL, Beach Petroleum, Geosurveys, Minotaur Exploration PTY LTD, and Southern Titanium NL. Dr. David Blight, Executive Director Office of Minerals and Energy Resources hosted the session.

The South Australian minerals industry is composed of mostly smaller companies. They utilize technology extensive for their exploration and development endeavors. The sources of the majority of this technology are an extensive network of service companies and universities.

On the positive side there appears to be extensive minerals and oil and gas reserve potential in South Australia. Also, the active companies are by nature risk takers that have extensive experience operating in the State. There are though, three major issues that the industry faces: access to land, access to money, and access to water.

Opportunities

- The Industry should continue their concerted efforts to develop a working relationship with Aborigines for access to land. Opportunities for Industry include new exploration potential. Opportunities for Aborigines include employment, community development assistance, education/skill enhancement and additional income sources.
- Should initiate a feasibility study of the relative value of vertical integration to further process the raw materials produced in the State. This could help attract outside investment for all phases of the Industry. (SA Universities could be of help in an effort of this type.)
- SA Universities should continue to look for ways to support the Industry, especially in regard to R&D of techniques to best solve local exploration and development issues like water use and access and salt cover.
- There were indications that some companies were finding ways to attract local investment funds. Their success should be looked to, as an inspiration for others and their methods should be copied if possible.
- The Industry should consider possible community education programs and other approaches to increase their recognition and acceptance. Programs and approaches used by some of the US organizations, like the Interstate Oil and Gas Compact Commission (IOGCC), American Petroleum Institute (API), and the Independent Petroleum Association of America (IPAA), could serve as references.

Facilitators

Resources

- SA's current mineral exports of \$1.8B are second only to wine.
- Based on reconnaissance studies, significant amounts of undeveloped mineral resources, including oil and gas, are believed to be available.
- SA's hydrocarbon production is split about 80/20 between gas and oil.

- SA has experienced/mature industry participants.
- Human resources are easily available; in fact currently there is somewhat of an oversupply of geologists/petroleum engineers.
- University of Adelaide recently got a substantial grant to support the new School of Petroleum Engineering and Management.
- Mining education is being addressed through sessions put on by science teachers for 7 year olds through high school age children. The Chamber of Mines in SA sponsors these sessions.
- Australia is attractive due to its stability in government, honesty, and it is an English-speaking nation.

Business Processes

- Desire to stick with core competencies.
- Recognized need for education.
- Established history of working in this environment.

Science and Technology

- SA companies are innovative and creative: "world leaders in new technologies." For example, SA has developed methods using Electromagnetics to "see" through the surface salt cover to find minerals.

Entrepreneurial Infrastructure

- The small SA minerals companies are risk takers. If land issues are resolved, then increased opportunities for smaller companies that are willing to take on the risk should be available.
- Australia is generally ranked in the top 10 of Global opportunities for minerals exploration.
- World class and competitive industry.

Government

- Royalty rates and fees are reasonably low (Mineral rights are owned by the crown).
- There is a well-established network of technology transfer.
- Petroleum Act of 2000.
- Industry has closely engaged with government.

Barriers-Obstacles

- Based on current concerns about land use and access, Australia is slipping in world ranking as preferred places to invest exploration funds.

Area 1:

Land Access: As part of the Reconciliation Process, Aborigine groups have gained new controls over the lands they occupy in regards to mineral exploration. Currently companies are trying to negotiate with these groups to settle land access issues. Until these approaches are settled and contracts signed, the uncertainty creates problems when companies try to raise investment funds for exploration programs.

Area 2:

Access to Capital: It is hard to raise capital in SA for mineral exploration programs due to a fairly risk adverse investment community. Currently, most funding comes from other parts of Australia like Sydney or Melbourne, and more

often than not, from international sources. This adds time and cost to these programs and is an obstacle to doing business.

- Because of the arid climate of much of SA, access to sufficient quantities fresh, potable water for use at exploration and development sites is an ongoing issue. Operators are adept at utilizing the extensive saline ground water resources for operational uses. This, though, adds cost to these minerals projects.
- As in other parts of the world, the Industry does not have strong public support. Most members of the community do not realize the economic impact/contributions of the mineral companies.

Quotes

- “Cappuccino Society”
- “Socially conscious lawyers”
- “Socially conscious politicians”
- “17% of the world's dollars for mineral exploration is sent to Australia.”
- “Australia has dropped down in the list of desirable exploration areas in the world. On the other hand, Australia has 17% of the minerals funding in the world.”
- “Aborigines want respect, jobs for their kids, and stability”
- “As Australians, we don't do a good job of value adding”

SMART CARD INDUSTRY

Local Participants

David West (Rundle Mall Manager)
 Andrew Mills (DAIS)
 Stephanie Dausts (WCH)
 Peter Williams (IEPO)
 Ian Harrison (SA BV2010)
 John Maunder (DT)

Types of Smart Cards

- High Value Card - Personal Information
- Low Value Card - Transportation

SWOT

Strengths

- Cards can be changed to meet demand needs
- Worldwide usage
- Enables technology buyers to get advance dollars for low-value cards

Weaknesses

- No software standard / multiple opportunities
- No identified urgent need in either private or public sectors.
- No business process identified where opportunity could be profit center immediately
- Card reader cost is high
- Multi-platform card readers have not been developed
- Card readers will not have other uses making them inefficient
- Card reader system is not fully implemented in other states
- Uncertain public support
- No business model has been developed to demonstrate adequate return on investment at the government level
- Privacy concerns
- No one has successfully implemented a system in Australia

Opportunities

- Market leader opportunity for high value cards as driver's license and for license tags. Time saver in the public sector
- This is a monitoring opportunity...first to determine a national operating standard and then to observe first innovators into the market place.
- Retail industry as affinity item
- Healthcare industry for children
- Public transportation
- Library
- License Tags for Police Identification Purposes...to save time with initial calls
- Buildings in case of fire / burglaries
- CRC development of cost effective multi-platform readers

Threats

- Consumer rejection at the low level in the public sector
- Economic downturn makes development cost prohibitive in public sector
- Technology advancements obsolete the system prior to being completely in place

Entrepreneurial Infrastructure

- In place overseas but not established locally

Issues

- False start with Tellstra
- Can't build business case with Smart Card to make it return required investment dollars

Perceived Life Cycle Status

- Perceived by public sector as embryonic life cycle stage

Porter's 5 ForcesRivalry – Moderate to High

- Two to three dominate technologies
- Slow market growth and acceptance
- High asset costs
- High switching costs
- Low level of product differentiation at consumer level
- High strategic stakes for market share
- High exit barriers
- Potential issues with cultural barriers

Substitutes – High

- Cash
- Credit cards

Buyer Power - High

- High because of few buyers (gov't)

Supplier Power – High

- Switching costs are high for single source readers

Barriers to Entry / Exit - High

- Non standard adoption by other states
- Card reader specificity
- High start-up costs for readers
- High exit barrier because of required asset investment

Things to Consider

Must resolve the card reader issues

- High initial cost and potentially costly exit barriers
- Single use of reader
- Single platform capabilities of reader.
- Security to protect privacy information from getting into wrong hands

Interview NotesReasons for the Smart Card

- Public transport ticketing – 16 different operators of public transport are now present

- Eliminate customer confusion on public transportation and create payment uniformity

Conclusion

- Not business case to move forward at this time

Issues

- False Start - Telstra pulled plug on Women and Childrens' Hospital and Adelaide University
- Less Government Interactions - ACT is small state with population of 350k. They are close to creating Smart Card. The city is Broadband enabled. One reason for success is only one level of government. Local and State are combined. State has toll road where smart card would be helpful.
- Cost of the reader is a "stumbling block" particularly if there is not prior and/or other need for the card reader.
- There is a perception that the market is not mature and evolution is still significant.
- There must be a government lead such as transport for the system to become accepted by the populus.
- There must be a uniform link at the national level such as Microsoft.
- All electronic devices should be smart card enabled.
- Smart Card readers must accommodate multiple platforms.
- There is no private user big enough to develop the market.
- Probably will have to develop two levels of smart cards at the governmental levels. The higher level will contain personal and possibly health information. The low-end level will be used for transportation purposes.
- Don't implement anything new until a national standard is identified and implemented.

How are Other States Handling Smart Card Issues

- Queensland
 - 16 different operators of public transportation
 - Customers want uniformity in transportation. Ex. Children get free passes in some areas and not in others.
- New South Wales
 - Problem because of historical mistrust with suppliers.
- Victoria
 - They like the system potential because of currency theft from existing systems.
 - Want to eliminate dealing with multiple operators.
 - Only state to discuss use of Cards with driver's licensing
- Tasmania
 - Ticketing system is worn out.
 - They are in the same boat as South Australia.
- South Australia
 - Public transportation is adequately functioning.
 - Library system does not see need
 - Initial costs
 - Not profit producing.
- Concensus
 - States to continue meeting with each other

- “There is some hope but don’t hold your breath.”

Investment Requirements

- Between 5 and 15 million dollars upfront costs

Who Locally is Close to Implementing a Smart Card?

- Women and Children’s Hospital
 - Munchy Card Initiative for children’s healthy food consumption
 - Had agreement with 4 schools.
 - Going online with Human Race Network. Currently in negotiations to use Smart Card for data management system. Seeking sponsorship for card readers. System to be used at safety management tool for children.

TECHNOLOGY – TELECOMMUNICATIONS & INTERNET CONNECTIVITY

Interview Team

- David Schieck, Team Leader
- Cristiane Gattaz
- Kevin Hudson
- Bill Minter

Who we met with

The team's visit and interview was held on Thursday the 12th of July with representatives of the South Australia Information Economy Policy Office (IEPO) at their headquarters. Deputy Director Alan Cunningham presented the agency's plan on Telecommunications in South Australia (SA). Our contact was enhanced by personal visits during the week with Vanessa Little, Robert Martin, and Michael Armitage, who provided valuable insight and examples, which show up in our case studies.

The afternoon's discussions were centered around the IEPO mission of evangelizing the advantages of use of the Internet and bringing connectivity to all the people of the state.

Opportunities:

- Due to strategic planning dating back to 1994 and regular updates of those plans, SA has a well thought-out program that should position the state to compete effectively in the Information Economy.
- An opportunity exists to further capitalize on the outsourcing agreement with EDS, perhaps by increasing media coverage of this arrangement and the track record so far.
- Pathway SA has a chance to become one of the most successful models worldwide of bringing connectivity to isolated areas, further establishing SA as a place where the population is generally engaged in uses of the Internet.
- Further cooperation with City of Adelaide efforts such as Smart City and increased networking among groups can allow SA to be more nimble than other states when it comes to economic development.
- A program should be considered that integrates the State's telecommunication and Internet leaders with the goals to generate new opportunities, strengthen synergy, and lower barriers.
- The upcoming World IT Congress will be an unparalleled center stage for the technological advantage that Adelaide and SA offer.

Case Studies

Pathway SA

A uniqueness of SA is that outside of Adelaide, nearly all communities are quite small and quite isolated. There is often not a compelling business reason for higher-speed Internet access. Consequently the objective of bringing connectivity to these communities must be approached carefully in order to make best use of the inevitable government investment that is necessary.

Attention was given to how connectivity programs have worked in other states. Existing institutions and gathering places in the outlying communities such as public libraries turned out to be the most successful sites for community access to be provided. In a few cases, the residents even voted to have their local pub wired.

Prescott's Automotive Services Pty Ltd

Prescott's has been profiled in a newsletter published by IEPO as a business that has benefited from its use of the Internet. Running contrary to the usual Web business story, Prescott's has only a minimal Web presence, but uses the Net extensively for electronic payments and distribution of inventory images to its customers and suppliers.

Prescott's is an example of how a business story can be highlighted to further increase awareness of the efficiencies of electronic commerce.

E-Commerce Across Australia Study

This survey, commissioned by the National Office for the Information Economy and conducted by the Allens Consulting Group, shows progress that SA has made in the past five years in the use of e-commerce. SA is in the top tier of states/territories in the following categories:

- Use of e-commerce
- Growth in Gross State Product
- Increase in employment

Facilitators

Innovation is in the culture in South Australia

- South Australians are very comfortable with technology, partly due to a history of innovation, even in Colonel Light's initial planning for Adelaide.
- Being somewhat geographically removed from the major population areas extends the urge to export to a State level. Citizens in SA know that their growth markets lie elsewhere. It does not take much explanation for the average South Australian to understand the advantages of utilizing the Internet.

Government is active in bringing connectivity to less traveled places

- In Texas the smaller cities are still wondering how they can receive higher-bandwidth connections at reasonable prices. In South Australia planning and implementation are well underway, due to a legacy of coordinated planning.
- The Smart Buildings program of the City of Adelaide promotes renewal of the city center through encouraging upgrades of older buildings that would otherwise be at a disadvantage. Fewer resources in the way of hard infrastructure will be required as a result.
- The IEPO has negotiating clout, which can get contracts that are better structured for the consumer.
- A variety of communications modes are being looked at, including mobile and Web site development.

Barriers/Obstacles

The bureaucracies of incumbent providers can hamper implementation

- Rules that make sense in one area may not in another. For example, a telephone company installing an Internet connection on a remote station may still refuse to touch inside wiring, necessitating a second truck roll to the site.

Before an investment is made in broadband connections, the public must perceive a need

- Stories of much less demand developing in other areas than expected by the planners

- The technologists in charge of planning should hear from a representative range of constituents, including those who do not see their life as lacking because they do not have plans to use the Internet.

Expense of ongoing network upgrades

- Bringing broadband to low population areas is very expensive.
- Maintaining and making the second and third generation upgrades to these networks can be a cost that is not anticipated.

THEBARTON PRECINCT & CHARLES STURT COUNCIL'S DIGITAL PRECINCT

Interview Team

This was a group visit for all of the Austin team.

Who we met with

The tours of Adelaide University's Thebarton Commerce and Research Precinct and its adjacent BioScience Complex (John Hodges) and the Charles Sturt Council's Digital Precinct (Carol Hampton) were conducted Tuesday afternoon, July 10th.

Rex Hunter, Thebarton's director, conducted the tour of the facilities. Adelaide University opened the Thebarton Precinct in 1992. This commerce and research precinct is the former site of a pharmaceutical manufacturing company. The Precinct is less than 4km from Adelaide's central business district and comprises 5 hectares of office, laboratory, manufacturing, and warehouse space.

Carol Hampton, Manager Economic Development for Charles Sturt Council organized the tour of the Digital Precinct. The aim of the Precinct, which was established in August 1997, is to create an environment to attract multimedia and digital technology businesses, which could share resources and benefit from synergies. This also served the purpose of revitalizing a portion Charles Sturt's business district, which had fallen into decline.

Opportunities

- Adelaide University and University of South Australia should look closely at ways of developing synergistic approaches between their Thebarton and Mawson Lakes facilities and programs. Among other things, this could offer Thebarton companies greater access to the benefits of the larger corporate cultures at Mawson Lakes who possibly could reciprocate by utilizing some of the resources of the smaller nimble companies of Thebarton.
- There might also be similar synergies that Adelaide University and Charles Sturt Council could cultivate between the Thebarton and Digital Precincts.
- Thebarton should consider ways that could increase the number of their start-up companies that have high growth targets, such as, a combination of training initiatives and screening criteria.
- The Premier's Department and Adelaide University should strongly consider continuing the Premier's Enterprise Scholarship beyond 2002. The original commitment was only for three years
- The Inner West Business Enterprise Centre and the Exporters' Club should be considered as an additional resource to assist with business development for Adelaide University's BIG and PES Programs
- Charles Sturt Council should continue to find ways to encourage ties between resident companies and the Technology School of the Future (TSOF). This should be an effective approach towards the goal of developing a community aspect to the Digital Precinct.

Case Studies

Adelaide University's Business Initiates from Graduates (BIG) and Premier's Enterprise Scholarship (PES) Programs

In 1993, Adelaide University commenced a Graduate Entrepreneurial Program, which aims to assist graduates with an innovative idea for a product, process or service to

embark on a business enterprise. The program consists of a number of schemes but the cornerstone has been Business Initiates from Graduates (BIG).

Under BIG, four Adelaide University scholarships are offered each year to successful applicants to undertake development of a business enterprise at the Thebarton Precinct within the incubator facility. Participants are not expected to have any prior business experience and can come from any discipline. Persons completing their final year of university study were targeted as the primary source of applicants.

In a concentrated 12-month period, applicants enroll in a Graduate Diploma in Business Enterprise, which provides training in small business management, finance, marketing, entrepreneurship and innovation. They are provided with free office accommodation, photocopying, fax, computing, and some service support together with access to interest free loan funds from the University's commercial development company.

At the end of the 12-month period, participants are offered subsidized accommodation at the Thebarton Research Precinct together with some continued mentoring and limited other assistance.

Participants in the program have been split between those undertaking product development and those entering skilled consultancy areas.

An example of a participant in the BIG program is Dean Martinello. Dean was an Engineering student from Adelaide University who applied to the program in 1996. His application was based on the development of a consultancy in the area of Factory Layout Simulation, Process Modeling, and Robot Workcell Design. Utilizing 3D graphical simulation, a manufacturer is able to explore the effects of any proposed changes to their operations prior to making a major capital investment.

Dean's company, 4DM, is currently in its fifth year of business and is an independent tenant at the Thebarton Precinct. Having completed a wide range of projects for an expanding client base, 4DM is recognized as one of the most experienced consultancies in its field in Adelaide.

The Premier's Enterprise Scholarship is a new part of the BIG program and has been developed to reward and encourage innovation and entrepreneurship in SA in the field of Information Technology and Communications (IT&T). This prestigious scholarship is valued at AUD \$45,000. A successful applicant receives, in addition to the BIG program support, funding to spend six months in Austin at the IC2 Institute of the University of Texas. At the Institute, has access to technology expertise, is provided introductions to international contacts, and receives training in developing and operating a business venture.

Stephen Watt was awarded the Premier's Enterprise Scholarship for 2000 to develop entrepreneurial skills in new media venture creation. He was the first participant in this scholarship program. During a 12-month residency in IC2 Institute's Austin Technology Incubator, Steve consulted to Alchemy Studios, winning and managing a major multimedia contract delivering web-based marketing and community building solutions for the Summer Camping industry in the United States.

Stephen Watt is an “innovation and commercialization manager” currently in residence at the Thebarton Precinct. Additionally, Steve has established his own company, Golden Haired Boy Multimedia, under the slogan “New Media Solutions for eBusiness”. Steve’s company is developing its first new media product, “DataShark” for commercial release in 2001.

Chalisa Morrison was awarded the Premier’s Enterprise Scholarship for 2001. She is an Adelaide fashion designer who had the award winning ‘innovative idea’ to develop a specialized CAD software system for the fashion design industry. Chalisa spent six months in Austin, Texas during 2001, as part of the PES program, researching and developing her ideas. As a result of her Austin experience, her once small idea has blossomed into a technology commercialization venture with much greater potential.

In addition to BIG and the Premier’s Enterprise Scholarship, the University also assists PhD candidates approaching the end of their candidacy with similar support to that outlined above.

To date, across all three programs (including this years participants) the University will have assisted approximately 50 people commence almost 40 businesses. (Some of the applicants have formed teams).

Facilitators

University and City Policy

- Criteria for occupancy at Thebarton Precinct are based upon a tenant’s ability to enter into a collaborative relationship with the University. This includes: cooperative education programs, joint research activities, and opportunities for student work experience.
- The City of Charles Sturt has developed a Digital Precinct strategy entitled ‘Switched On Hindmarsh’. This strategy includes: establishment of an integrated IT platform, providing high quality urban design and public infrastructure to upgrade the amenities of the District, and development of a marketing plan that provides a strong identity for the promotion of the area.

Business Oriented Processes and Entrepreneurial Approaches

- Thebarton programs have supported the establishment of over 40 new graduate businesses during the 1993-2001 period.
- Thebarton has over 70 tenant groups comprising commercial enterprises, start-up companies, university research, and service groups.
- Thebarton’s Graduate Entrepreneurial Program provides a physical and program base for developing student projects into new business enterprises.
- Thebarton University hosts applied research activities including areas of Mechanical Engineering, Chemical Engineering, Occupational Health, Electronics, and Laser Optics.
- Commercial enterprises at the Thebarton Precinct include businesses involved in: materials engineering, biotechnology, laser optics technology, medical products, information technology, environmental sciences, and telecommunications among others.
- The Exporters’ Club is located within the Digital Precinct. It is a Charles Sturt Council initiative with Port Adelaide/Enfield to assist small and medium size businesses to export.

- The Inner West Business Enterprise Centre is located within the Digital Precinct. It provides advice for small businesses to assist with start up businesses and general business advice and networking opportunities.
- The Digital Precinct Authority was established as a subsidiary of Council to assist with property development, partnerships between business and the coordination of initiatives.
- The new library for the Digital Precinct will be the IT flagship for the Charles Sturt Council's library service. This nontraditional library will have a strong business focus using modern information technology resources.

Physical Infrastructure and Resources

- Thebarton uses its natural environment to its benefit marketing itself, taking the established buildings and modifying them to provide an attractive and functional facility.
- Thebarton seems to have a well-defined market and their product is tailored to suit this market, i.e. small, cozy, 'cool' surroundings with a variety of spaces to meet many niches.
- Interestingly, Thebarton has been self-funded since its inception.
- The Charles Sturt Council utilized vacant buildings and a substantial landholding in the Hindmarsh area to develop the Digital Precinct.
- Currently there are over 25 businesses located in the Digital Precinct, many in buildings that the Council has refurbished and converted to tenancies.
- The Technology School of the Future (TSOF) is an ideal anchor faculty for the Digital Precinct. TSOF is South Australia's (SA) major center for teacher development in learning technologies and is a unique facility when compared internationally. It is part of the Education Development Centre.

Barriers/Obstacles

- Many of the start-up companies at Thebarton are life style oriented. There is no reason why a business cannot have this type of growth goal, but in terms of the larger economic development picture, it is somewhat limiting.
- A major barrier to expanding the BIG Program is not just lack of funds for promotion or support of successful candidates but rather, gaining enough potential applicants of a standard to warrant expanding the numbers.
- The primary barrier for the PES Program will be whether the Premier's Department and the University wish to continue the Premier's Enterprise Scholarship beyond 2002. The original commitment was only for three years.
- New small companies in both precincts have limited access to networking opportunities in larger markets (such as US trade shows).
- These companies also find it hard to acquire the early stage funding needed to start building their businesses. Even government grants are problematic and can require large amounts of documentation.
- Insufficient accommodation within the Digital Precinct to handle business growth
- Businesses within the Digital Precinct are still working isolated from each other

Quotes

Notable quotes included:

- 'We must continue to work on developing the culture among young graduates of seeing self-employment as a career path and a risk worth taking.'

TRANSPORTATION STUDY **PORTS CORP AND AAL**

By Stephen Long, Adrienne Hughto, and Eddy Trevino

Introduction

This report is broken into two sections. The first is Ports Corp and the second is Adelaide Airport Ltd. (AAL). The session was held at Ports Corp by hosts Wayne Parnham and Phil Baker on Wednesday July 11, 2001. The Adelaide Knowledge Hub Project members included Joseph Tuma from Business Vision 2010 as well as Stephen Long, Adrienne Hughto, and Eddy Trevino from the University of Texas.

PORTS CORP

Strengths

- ❑ Can import and export both bulk and container shipments
- ❑ Ports have available capacity
- ❑ Control systems are in place
- ❑ Well-developed corporate strategy
- ❑ Labor stability
- ❑ Designated routes for trucks that lead directly to port and rail to silos
- ❑ Proximity to manufacturing facilities
- ❑ Strategic alliances with trucking industry
- ❑ Intermodal facilities with container terminal, rail and road system for the efficient transfer of cargo.
- ❑ Environmental Management System implemented to deal with environmental concerns and certified to ISO 14001.

Weakness

- ❑ Materials management systems are untested for peak loading. Minor delays take place in peak loading.
- ❑ Poor Country Brand because of prior problems.
- ❑ Adelaide not known internationally
- ❑ Potential container shortage for exports with increase demand
- ❑ IT system not completely institutionalized

Opportunities

- ❑ Market expansion because of available capacity.
- ❑ Exploit container market segments.
- ❑ Tourism market segment expansion.
- ❑ Warehouse industry.
- ❑ Increase import business.

Threats

- ❑ Rail line threat for containers
- ❑ Governmental support of rail line at time when terminal is becoming privatized
- ❑ Regional competition from Sydney and Melbourne
- ❑ Containers deficiency for exports.
- ❑ Residential growth in surrounding areas will require port to relocate operations.
- ❑ Branding because military used to be able to dock for free and now have to pay for opportunity to dock

COMMERCIAL IN CONFIDENCE

Porters 5 Forces

Risk of New Entry by Potential Competitors

- ❑ High – Rail is coming
- ❑ Low – air

Degree of Rivalry Among Domestic Established Industries

- ❑ High – Other ports

Bargaining Power of Buyers

- ❑ High – Alternatives are available

Bargaining Power of Suppliers

- ❑ Low – The industry is mature and capital expenditures are minimal.

Threat of Substitutes

- ❑ Low – Choices are air, rail, or ship.

Discussion and Comments

Ports Corp South Australia manages six regional ports - Klein Point, Port Giles, Port Lincoln, Port Pirie, Thevenard and Wallaroo. During 1999/2000 6.8 million tons of cargo were moved through these regional ports - with 4.7 million tons exported to markets outside of South Australia. Goods as diverse as citrus, grains, oil, scrap metal and live sheep are handled through these ports, an indication of their capacity to handle a broad range of materials^{iv} The discussions included concerns of the industry which are bulleted below:

- ❑ Charter purely directed at commercial shipping; traditionally had ten ports in suite of assets. Seven ports will be sold and the SA for tourism purposes will retain three ports.
- ❑ Annually conducts \$31M turnover business. Total employee count of 140 with most working in full time employment.
- ❑ Port Adelaide has Australia's only unique purpose-built on-dock intermodal facilities that are integrated with the container terminal and national rail and road system for the efficient transfer of cargo.^v
- ❑ Ship around 13 ½ to 14 tons of cargo a year. Bulk and semi bulk cargos generate approximately 70% of revenue and physical activities. Bulk business is tied to agriculture community and is tied to world market and seasonal conditions.
- ❑ Small container business constitutes less than 20 that have small container businesses. Annual container business is approximately 140K tons per years, but capacity is 250K tons a year. In the container area there are opportunities to expand by use with the automotive industry. This concept involves importing parts and then exporting the finished product.
- ❑ The balance of the port is heavily skewed to exports. Location of container is an issue. For every container that is imported, there are approximately 3 containers that are exported. Containers have to be shipped in from Sydney to make up imbalance and they don't often have a sense of urgency or availability to redistribute the containers.
- ❑ Holding time for imported container goods is 15 to 18 hours before ship arrives because of customs. This is a lower time than at other ports.
- ❑ The Adelaide funded rail to Darwin is seen as a competitor to the shipping industry. They view the possibility that goods may be taken by rail and then shipped from a northern port. Exports arrive at shipping location approximately 4 hours before ship departs. Goods are loaded directly onto the ships. This process takes less time than at other ports (most ports require a full day). 75-80% of trade is packed on site.

- ❑ Proposals to develop national warehousing around the port were discussed. Land is available and the process is being promoted. There is a good relationship between the port and government.
- ❑ The port works with other governmental authorities in attempts to increase business.
- ❑ Port operates at 40% capacity overall. In peak season there are minor delays in terminals receiving seasonal goods.

Summary and Recommendations

The uniqueness and strength of the Ports Corp are obvious. The relationship between government and the shipping industry is good. The stability and good morale of the labor industry is a positive indicator. The industry has been a success story for the region.

However there are concerns that should be addressed. The major concern appears to be the small import business as compared to the export. This issue should take top priority for continued health of the shipping industry. Studies should be undertaken to pinpoint key importers and products suited to the area.

Attracting large freight companies rates just underneath the import issue. The use of warehouses for convenience is good. They may also capitalize the bonded warehouse system. The licensed warehouse system provides industry with a duty deferral facility whereby owners of imported and excisable goods on which duty has not been paid may store such goods "under bond" in Customs licensed warehouses, until such time as they are ready to pay the duty on the goods and enter them into home consumption.^{vi} The use of such facilities may attract large freight companies to the area.

The rail to Darwin appears eminent. The creation of the Track Authority by the Commonwealth encourages further private sector investment in the rail infrastructure.^{vii} This indicates the competitive situation will intensify over time. Early defense strategies in marketing and cost pricing should take place quickly if they have not already been tasked.

ADELAIDE AIRPORT LTD (AAL)

Strengths

- ❑ Stability in capital, lease, and facilities.
- ❑ Airport has available capacity for growth expansion.
- ❑ Control systems are in place
- ❑ Well-developed corporate strategy.
- ❑ Labor stability.
- ❑ Good training facility.
- ❑ Monopoly position in State.
- ❑ Fifth largest in Country.
- ❑ Fastest growing passenger airport in the country.
- ❑ Proximity to manufacturing facilities

Weakness

- ❑ Low geographic population.
- ❑ Curfews limit flights.
- ❑ Adelaide is not known internationally.

- ❑ Outsourcing causes problems with FAC.
- ❑ Ability to secure airline hubs.
- ❑ Complex capital structure^{viii}

Opportunities

- ❑ Market expansion because of available capacity.
- ❑ Potential to exploit underutilized geographic market areas.
- ❑ Tourism market segment expansion.
- ❑ Freight forecasts show increased potential.
- ❑ Rail opens new territory.

Threats

- ❑ Regional competition from Sydney and Melbourne
- ❑ Few carriers control markets, making it difficult for new carriers and competition.
- ❑ Residential growth in surrounding areas cause increased restrictions on scheduling.

Issues

- ❑ Ability to handle conflicts between carriers.
- ❑ Ability to increase freight traffic
- ❑ Environmental problems – noise pollution, water runoff, and endangerment of plants.

Porters 5 Forces

Risk of New Entry by Potential Competitors

- ❑ Low – Rail is not considered a competitor
- ❑ Low – Established airports have advantage
- ❑ Low – Freight shipping is in place

Degree of Rivalry Among Established Industries

- ❑ High – Proximity to other countries and low population give disadvantage

Bargaining Power of Buyers

- ❑ Low – Few alternatives are available

Bargaining Power of Suppliers

- ❑ Low – The industry is mature and capital expenditures are minimal.

Threat of Substitutes

- ❑ Low – Air, rail, or ship.

Discussion and Comments.

The Adelaide Airport is Australia's fifth largest, handling 4.3 million in 1999-2000. AAL operates Adelaide Airport under a 50-year lease, renewable for a further 49 years. The airport was privatized in 1998 for A\$435 million.^{ix} Air customers were identified in the meeting from high to low as: Singapore, Japan, UK, Hong Kong, USA, Indonesia, Malaysia, Belgium, NZ, and France

There were many strengths that make the airport competitive and strong in its abilities. Most of the investors are long-term investors. It was stated the shareholders own the airport with a 49-year lease. There is also an air training facility next to Mawson Lakes. This facility is particularly beneficial in its close proximity and takes advantage of the technology park environment. The workforce considers the airport one of the best places to work in the areas and has high morale. The airport is the fifth largest airport in the country. FedX from the government is a good supplement profit base to its freight operations. There is a perceived competitive advantage in the local industry because the airport is located right in middle of Australia. More service is provided to Europe and

UK when compared to Asia. Additionally, it is the fastest growing airport nationally with domestic passengers.

The opportunities of this those that attended this meeting saw airport in a positive light. It was indicated that a huge market potential exists in New Zealand. The problem with penetrating this market is seen in the fact that New Zealand views the east coast of Australia as the only place to do business. Opportunities are further forecasted in the freight area where volumes are expected to triple in next twenty years and even outstrip passenger growth forecasts with links to business growth. Unlike the seaport industry the air industry views the rail to Darwin as a major benefit. This is because mining towns will open, thereby increasing air travel as well as freight.

The weaknesses were identified to aid in order to improve the future economies of the air industry. Indications by attendees noted that from the FAC perspective too many of the operations have been outsourced. This hurdle has made day-to-day coordination and facilitation more difficult, and has impacted streamlining of operations. It was also noted that the overall population of South Australia is low with only 1.2 million in the Adelaide area compared to about 4 million in Sydney. This makes it difficult to persuade airlines to come directly into the area because of the competition from the more populated areas. The airline hubs are established in Sydney and Melbourne. This creates issues in attempting to secure international flights as well. The complex capital structure can be explored at Moodys Report Presales Report (indicated in the endnote section).

The threats were identified as well. The relocation issues in the new terminal building because of friction between Qantas and Virgin Blue is an indicator of the larger issue of problems between established carriers and penetration by new carriers. Qantas and Ansett have dominated the market in the Adelaide area. New carriers typically are driven out of business through price wars and other tactics. The results are fewer routes and less overall competition. Another issues involves the fact that passenger growth is projected to slow down next year. While increasing this growth is a major problem the air industry must address, the issue is further complicated. It was stated that time could not be dedicated to growing the market because half time of the available time is spent fighting to keep the market

The group addressed primary issues for consideration. The issues of handling the competition of airline carriers as well as the rates of passenger and freight growth will continue to be addressed. The issues of city curfews, particularly for airlines that deal with freight only are a large problem because they limit the hours that airlines can fly. This also makes it difficult to attract large freight companies to the area. Noise is an environmental issue that is a problem for this industry. Noise protection has been installed in some houses located in flight path. The environmental issues of water runoff and endangered plants appear to be in the process of being remedied at this time.

Summary and Recommendations

Overall the factors indicate a stable environment with an economic upward growth curve. With a strong economic base, local monopoly, and good growth potential it appears that increasing growth can be best served through paying attention to details. In addition, addressing many of the individual problems can be categorized and utilized for case studies of much larger and longer lasting problems facing this airport.

For instance, as indicated that New Zealand views the east coast of Australia as the only place to do business. Penetration of this barrier is an indicator of other markets where South Australia is viewed as more remote than other airports in Australia for business and with less market potential. Creative measures employed in the capture of this market should be used for other areas as well. By turning the focus on one specific area close to home as a benchmark study, can be touted as a good success story for future market attraction.

Small domestic airlines and even outside International carriers are at a very real disadvantage in the Adelaide area. The issue of getting Qantas into the new main terminal is the stuff local legends are made of. These areas should be addressed as soon as possible, so Adelaide is not viewed on a national scale as unable to cope with these disputes. Building incentives should be put in place to make it hard for Qantas to resist moving. For example, smart wiring in the main terminal should be put in place. High priority measures for new implementations in the new building, where the older buildings might be placed on a six-month wait out period or not receive new upgrades at all. If they view Virgin Blue as having things they do not, they may not want to stay where they are.

Exploring and working new markets with differentiation as a factor would promote growth. The warehouse issues discussed in the Port section could be of benefit here within attracting and increasing freight. Promotion of the fact that more service is provided European and UK than Asian can be a differentiator. Since prominence of location gives other ports a distinct advantage to the Asian markets, the longer distance International markets might be capitalized on. Ties to other countries like USA and Mexico for freight with increases as Adelaide technology sector grows can be utilized as well.

VENTURE CAPITAL, ANGELS AND OTHER EARLY STAGE FUNDING

Interview Team

- Barbara Fossum
- Peter Polonsky
- David Schieck
- Jane Schueler
- Burrjed Stafford

Who we met with

The team's main interview session was held on Thursday the 12th of July with various representatives from the South Australian (SA) investment community. They included: Philip Roberts of Barron Partners- I-Bank, Geoff Thomas from Playford Centre, Ian Kowalick, Richard Westall, Horden Wiltshire, and Peter Vroom of Newport Capital.

Additional Information Sources

During the week additional informal discussions were conducted with various individuals concerning this topic and its vital importance to fostering change.

Also, an information search via the Internet was conducted to find additional documentation concerning this topic. This search found two particularly helpful sources of data:

- The Australian Bureau of Statistics' "*Financial System Special Article – Venture Capital Survey, 1999-2000*",
<http://www.abs.gov.au/Ausstats/ABS%40.nsf/90a12181d877a6a6ca2568b5007b861c/a5b09c010d1db1b7ca256a00007b99f7!OpenDocument>
- PricewaterhouseCoopers' "*Benchmarking Australian Institutional Investment In Domestic Venture Capital*", prepared for the Department of Industry, Science and Resources, Canberra, June 2000
<http://www.isr.gov.au/industry/innovation/VentureAwarenessFinalReport.pdf>

Opportunities

- Create an "early state" investment partnering relationship between Adelaide and Austin for technology oriented opportunities (Develop an angel to angel mentoring network, with IC2 being the focal point).
- Identify champions to lead, challenge, build and support an investment community in South Australia for entrepreneurial opportunities.
- Develop training programs to educate potential entrepreneurs to communicate in the "language of investors"

Case Studies

- No case study prepared for this session.

Facilitators

National, State and Local Policy

- Various State and local government initiatives to provide infrastructure for businesses and start-ups currently exist that have proven to be quite helpful.
- There exists an impression that the climate is right at the present time for deeper cultural changes.

Business Oriented Processes and Entrepreneurial Approaches

- A "First Tuesday" network (100 to 180 people that meet monthly) bridges funding from angels to VCs, but there is no VC presence in these monthly networking meetings.
- A VC summit is planned in August. Also, Business Vision 2010 is planning a VC Forum at some point in the future.
- Playford Centre, a seed capital investment company that is 100% owned by Government, whose scoring of applicants is based on people, market, and product, report a good deal flow.
- Invest SA is a government program to encourage foreign direct investment. One of their major areas of emphasis is the Information and Communications Technology (ICT) sector. They take a marketing approach and do research working collectively with other agencies locally. They are mandated to work on a statewide basis for investment opportunities that are good for the region as a whole.

Physical Infrastructure and Resources

- A few VC funds have local representatives in Adelaide employed on an agency basis who receive commissions based on the success of the companies.
- There is a national group of wealthy Australian angels that occasionally invest in Adelaide start-ups, but the concept of "out of site, out of mind" seemed to prevail since most investment capital originates in Sydney or Melbourne.
- The PricewaterhouseCoopers' benchmarking study offers encourage in regard to venture capital investment, at least for Australia as a whole. Australian venture capital investment grew rapidly between 1998 and 1999 and early stage investment grew faster than overall investment in this sector.

Barriers/Obstacles

- It is felt that there is not always a collective approach with regards to all of the Government activities. Poor communications was cited as a problem at times.
- The fear of failure and its accompanying social stigma is seen as a limiting factor.
- There is an acknowledged "Valley of Death" in the \$200k to \$1M range in Adelaide between funding from friends/family and funding from VCs. The problem appears to be insufficient angel capital to develop good ideas to the VC stage.
- Many times, wealthy individuals in Adelaide prefer to invest in vines, beans, and other agricultural schemes where they receive tax deduction up front, rather than waiting 5 years to see if the I/T investment will pay off. VCs tend to be interested in the tax benefits.
- The tax system, in general, has not been right to stimulate angel investment. For example, the tax code encouraged dividend investment, rather than capital investment.
- The 'one hour rule' – VCs tend to invest in opportunities that are located not more than one hour away from their location.
- The Australian Bureau of Statistics' report, Table 7, indicates that out of all Australian companies receiving VC funding (651) in 1999-2000, only 16 were located in South Australia, representing 2.6%. Those companies received only \$46M, or 1.9% of the total \$2,480M funded in Australia that year.

| Table 7. LOCATION OF INVESTMENT | | | | |
|---------------------------------|--------------------|---------|------------------|---------|
| State/Territory | Investee Companies | | Investment Value | |
| | No. | % Share | \$M | % Value |
| NSW | 245 | 37.6 | 1,164 | 46.9 |

COMMERCIAL IN CONFIDENCE

| | | | | |
|--------------|------------|------------|--------------|------------|
| Vic. | 204 | 31.3 | 598 | 24.1 |
| Qld. | 43 | 6.6 | 210 | 8.5 |
| WA. | 66 | 10.1 | 137 | 5.5 |
| SA | 16 | 2.6 | 46 | 1.9 |
| Overseas | 56 | 8.6 | 284 | 11.4 |
| Other | 21 | 3.2 | 41 | 1.7 |
| Total | 651 | 100 | 2,480 | 100 |

'Other' includes Tasmania, Northern Territory, and Australian Capital Territory.

Location was determined by using the post code of the head office of the enterprise.

- Based on Bureau of Statistics' data, only 5 of the 16 investee companies were from the areas of IT, Media, Electronics and/or Communications. These 5 accounted for \$10M of the \$46M invested. There were no Biotech or Pharmaceutical investee companies.
- The PricewaterhouseCoopers' report points out that a larger percentage of Australian venture capital comes from superannuation funds (38% in 1999^x) as compared to the US (30% in 1999) and Europe (24% in 1998).

Quotes

Notable quotes:

- 'Adelaide gets 2% of Australia's VC funding.'
- '70% - 80% of VC funds come from Sydney.'
- 'There is a need for local seed stage money.' Otherwise, 'Adelaide will always be a feeder to Sydney and Melbourne.'
- 'Adelaide is more risk averse than Sydney or Melbourne.'
- 'The [potential] angel investment community is hesitant to invest; they don't understand the investments...it's not a question of adequate return.'
- 'Adelaide's wealth is in real estate, and not entrepreneurial schemes.'
- 'Investors are not organized.'
- 'The culture has been about creating good employees, not creating job seekers.'
- 'VC money will go where there are good business opportunities.'
- 'You need to be born global.'

SOUTH AUSTRALIAN WINE INDUSTRY

Interview Team

- Cristiane Gattaz
- Cheri Kirby
- Bill Minter
- Eddy Trevino

Who we met with

The team conducted an interview session at the National Wine Centre on Monday afternoon the 9th of July. Linda Bowes, Executive Director of the South Australia Wine & Brandy Association, was our moderator. Peter Wall of Yalumba Wine Company represented the perspective of the wine companies, and David Hall from Grape & Wine Research & Development Corporation reported on the use of technology by the industry. Bill Renshaw represented the Wine Industry Suppliers Association.

Opportunities

The wine industry in South Australia is often referred to as one of the most successful examples of an industry cluster. There is a history of working together going back to the very beginnings of viticulture in Australia, when growers banded together to import cuttings from other continents.

Industry cooperation and aggressive implementation of technology are mentioned as early drivers for the industry's success in the past 15 years. Well-conceived plans have been formulated, monitored and frequently updated. Today, the wine industry accounts for the highest value of exports from South Australia and employs over 12,000 people and accounts for over 70% of the total national production.

- Continue the growth and global competitiveness that have become the industry's hallmark. The Australian Wine Foundation's 2025 Strategy 2025 plan has been updated and extended to project the additional growing area, water, processing, storage and people resources that will be necessary to achieve a 6.5% of the world market by 2025. The targets set when the plan was set in motion in 1995 have been met.
- Leverage the considerable R&D efforts of the industry. Lower the costs of harvesting, distribution and irrigation. Find ways to accelerate the R&D by working with the biotech and university sectors. Take steps to protect and extend the intellectual property the industry now has, so it can be defended later if necessary.
- Stimulate the adoption of technology developed within Australia by increasing funding to the CRC and create a technology transfer department for capitalizing on the non-industry related techniques that are developed.
- Be prepared for genetically modified viticulture if market acceptance appears imminent. Participate in the education of the consumer when genetically modified viticulture becomes a need.
- Develop a centralized database of IP, protective actions from other governments, news and international issues that would affect the industry. The industry needs to disseminate the information to its members more quickly and reduce the risk of not responding to uncertainties. Examples include infrastructure, legal changes, cultural economic, political and social changes and a plan for rapid response to threats.

- Transfer the cooperative model of wine to other industries, such as fish, dairy, olive processing and Information Technology industries. Teach them how to be less fragmented and more focused on global exports.
- Work with other industry employers as they recruit talented people from all over the globe to make the presence of the wine industry another lifestyle “plus” for South Australia.
- Increase benefits from wine tourism to the wineries themselves through increased cooperation between the tourism operators and State Tourism authorities. Wine tourism is expected to double in the next 10 years.

Case Studies

- Australian companies by nature understand exporting better than companies in other countries. Now the muscle developed by successful exporters is being seen in acquisitions such as that of Beringer Wine Estates by Foster’s Brewing Group Ltd.
- The Mutual Acceptance Agreement on Oenological Practices of the New World Wine Producers Forum was agreed to in principle in the spring of 2001. When the agreement is completely negotiated and signed, it will mean that a signatory country cannot refuse to accept a wine from another signatory country that has been made in accordance with the oenological practices of the importing country. Australia has been a leader and proponent of the agreement as a means of protecting its overseas wine trade.
- The South Australian wine industry is a leader in technology transfer. Frameworks such as the Grape and Wine Research and Development Corporation provide growers and processors many tools including facilitation of coinvestment and development of training programs that enhance the long-term development and competitiveness of the industry.

Facilitators

Resources

- The industry has been successful in getting enough hectares under cultivation to meet aggressive targets for supply in the past. The 2010 and 2025 targets appear to be achievable.
- The ports of South Australia with their plans for expansion are sufficient to handle the increased throughput for the future. A specialized facility for the shipping of wine is currently being constructed.
- Availability of skilled workers appears sufficient to achieve the 2% annual growth rate projected.
- Worldwide demand for quality wines is increasing. While declining consumption trends in traditional wine producing countries such as France, Italy and Argentina will have an effect, growing consumer markets in the UK, Scandinavia and North America, as well as Asia, South America and Africa are areas for which the Australian wine industry is well positioned to serve.

Business Processes

- The industry’s Marketing Decade plans for helping achieve higher average margins and enhanced brand values for Australian wine.

Science and Technology

- The industry is willing to invest in R&D, and expects to stay in the forefront of implementation of technology worldwide.

Barrier/Obstacles

Governmental issues

- The level of taxation of the industry in Australia puts it at second-highest in the world after New Zealand.
- Bilateral and multilateral trade agreements already in place can restrict markets for South Australian wine.
- A variety of taxation and regulatory environments in countries such as the U.S.

Infrastructure Barriers

- Roads: The industry is concerned that the various governments responsible for road construction keep up with the roadway construction needs resulting from both shipment of product and the anticipated doubling of wine tourism. Alternate routes are needed to separate truck traffic from tourist traffic.
- Electricity: Processes in the wine industry do not lend themselves to load time period shifting. The industry needs reliable and affordable sources of electricity.
- Water: The industry is the most efficient horticultural industry in its use of water; it needs continued access to sources of quality water.

Business

- Threats to the industry's medium-sized domestic producers, who may not have the capital to withstand losing market share and cannot invest adequately to achieve the efficiencies of the larger producers.
- Technologies and talent migrating to other areas and countries.
- Training of new people suffers from a "Recipe training" mindset, not an R&D mindset.
- Throwing everything into the public domain so quickly.
- "Catch us if you can" as a strategy to stay ahead technologically.
- Shrinking distribution channels through consolidation make it more difficult to achieve shelf space.
- Strong American dollar competitive benefits may go away.
- Dependence on the trucking industry.

Unknowns

- Effect of the railway to Darwin and port on the export industries.
- Stance of government in regard to taxation of the industry.

ⁱⁱ <http://www.austrade.gov.au/generalinfo/>

ⁱⁱⁱ <http://www.it-southaustralia.com.au/news/frame.htm>

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- ^{iv} <http://www.portscorp.com.au/>
^v http://www.portscorp.sa.gov.au/ports_adelaide.htm
^{vi} [http://www.dfat.gov.au/geo/americas/la/publications/la_english.html#BONDED WAREHOUSES](http://www.dfat.gov.au/geo/americas/la/publications/la_english.html#BONDED_WAREHOUSES)
^{vii} <http://www.tce.rmit.edu.au/BCE/97pg/MPM/Theses/TKelly/TKellyall.pdf>
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^x Arthur Anderson/AVCAL 1999 *Survey of Venture Capital*